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PLINY

NATURAL HISTORY

IV

LIBRI XII–XVI

PLINY

NATURAL HISTORY

WITH AN ENGLISH TRANSLATION
IN TEN VOLUMES

VOLUME IV

LIBRI XII–XVI

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The Editors announce with much regret the death of Mr. H. Rackham, whereby the Loeb Classical Library has lost one of its most helpful contributors. Mr. Rackham had completed his work on the galley-proofs of this volume, and was engaged in the revision of the page-proofs. The whole of the translation, except a few verbal changes, is his.

INTRODUCTION

This volume contains Books XII–XVI of Pliny's *Naturalis Historia.* Their subject is trees and vines.

The detailed contents will be found in Pliny's outline of the work, which, with lists of the authorities used for each Book, forms the contents of Book I. For Books XII–XVI, see Volume I, pp. 65–80, of this edition.

Book XII deals with trees—their various qualities.

Book XIII gives foreign trees and their use in supplying scent, fruit, paper and wood.

Book XIV discusses vine-growing and varieties of wine.

Book XV. Olives, olive-oil and fruit-trees.

Book XVI. Forest trees, their nature and varieties; their value for timber and other commodities. Longevity of trees. Parasitic plants.

PLINY:
NATURAL HISTORY

BOOK XII

PLINII NATURALIS HISTORIAE

LIBER XII

I. Animalium omnium quae nosci potuere naturae generatim membratimque ita se habent. restat ut[1]—neque ipsa anima carentia, quandoquidem nihil sine ea vivit—terra edita aut[2] inde eruta dicantur ac nullum sileatur rerum naturae opus.

Diu fuere occulta eius beneficia, summumque munus homini datum arbores silvaeque intellegebantur. hinc primum alimenta, harum fronde mollior specus, libro vestis; etiamnunc gentes sic
2 degunt. quo magis ac magis admirari subit his a principiis caedi montes in marmora, vestes ad Seras[3] peti, unionem in Rubri maris profunda,[4] zmaragdum in imam tellurem[5] quaeri. ad hoc excogitata sunt aurium vulnera, nimirum quoniam parum erat manibus, collo, crinibus gestari nisi infoderentur etiam corpori. quamobrem sequi par est ordinem vitae et

[1] *V.l.* restant.
[2] *Madvig*: ut (et *Mayhoff*).
[3] *V.l.* a Seribus.
[4] *V.l.* profundo.
[5] *Rackham*: ima tellure.

PLINY: NATURAL HISTORY

BOOK XII

I. Such are the generic and specific characteristics of all the animals about which it has been possible to obtain information. It remains to describe the things produced by the earth or dug up from it—these also not being devoid of vital spirit, since nothing lives without it—and not to pass over in silence any of the works of nature.

The riches of earth's bounty were for a long time hidden, and the trees and forests were supposed to be the supreme gift bestowed by her on man. These first provided him with food, their foliage carpeted his cave and their bark served him for raiment; there are still races which practise this mode of life. This inspires us with ever greater and greater wonder that starting from these beginnings man has come to quarry the mountains for marbles, to go as far as China for raiment, and to explore the depths of the Red Sea for the pearl and the bowels of the earth for the emerald. For this purpose has been devised the fashion of making wounds in the ears, because forsooth it was not enough for jewels to be worn on the hands and neck and hair without making them even pierce through the body. Consequently it will be well to follow the biological order and to speak *Trees: introductory remarks.*

arbores ante alia dicere ac moribus primordia ingerere
nostris.

3 II. Haec fuere numinum templa, priscoque ritu
simplicia rura etiam nunc deo praecellentem arborem
dicant; nec magis auro fulgentia atque ebore simu-
lacra quam lucos et in iis silentia ipsa adoramus.
arborum genera numinibus suis dicata perpetuo
servantur, ut Iovi aesculus, Apollini laurus, Minervae
olea, Veneri myrtus, Herculi populus; quin et
Silvanos Faunosque et dearum genera silvis ac sua
4 numina tamquam e caelo attributa credimus. arbores
postea blandioribus fruge sucis hominem mitigavere:
ex his recreans membra olei liquor viresque potus
vini, tot denique sapores anni sponte venientes, et
mensae, depugnetur licet earum causa cum feris et
pasti naufragorum corporibus pisces expetantur,
5 etiam nunc tamen secundae. mille praeterea sunt
usus earum sine quis vita degi non possit. arbore
sulcamus maria terrasque admovemus, arbore ex-
aedificamus tecta; arborea et simulacra numinum
fuere nondum pretio excogitato beluarum cadaver
atque ut, a diis nato iure luxuriae, eodem ebore

of trees before earth's other products, and to bring forward origins for our customs.

Trees sacred to deities.

II. Once upon a time trees were the temples of the deities, and in conformity with primitive ritual simple country places even now dedicate a tree of exceptional height to a god; nor do we pay greater worship to images shining with gold and ivory than to the forests and to the very silences that they contain. The different kinds of trees are kept perpetually dedicated to their own divinities, for instance, the winter-oak to Jove, the bay to Apollo, the olive to Minerva, the myrtle to Venus, the poplar to Hercules; nay, more, we also believe that the Silvani and Fauns and various kinds of goddesses are as it were assigned to the forests from heaven and as their own special divinities.

Uses of trees.

Subsequently it was the trees with juices more succulent than corn that gave mellowness to man; for from trees are obtained olive oil to refresh the limbs and draughts of wine to restore the strength, and in fine all the savours that come by the spontaneous generosity of the year, and the fruits that are even now served as a second course, in spite of the fact that battle must be waged with the wild beasts to obtain them and that fishes fattened on the corpses of shipwrecked mariners are in demand. Moreover, there are a thousand other uses for those trees which are indispensable for carrying on life. We use a tree to furrow the seas and to bring the lands nearer together, we use a tree for building houses; even the images of the deities were made from trees, before men had yet thought of paying a price for the corpses of huge animals, or arranged that inasmuch as the privilege of luxury had originated from the gods, we should behold the countenances of the deities

numinum ora spectarentur et mensarum pedes. produnt Alpibus coercitas ut [1] tum inexuperabili munimento Gallias hanc primum habuisse causam superfundendi se Italiae, quod Helico ex Helvetiis civis earum fabrilem ob artem Romae commoratus ficum siccam et uvam oleique ac vini praemissa [2] remeans secum tulisset; quapropter haec vel bello quaesisse venia sit.

6 III. Sed quis non iure miretur arborem umbrae gratia tantum ex alieno petitam orbe? platanus haec est, in [3] mare Ionium Diomedis insula tenus eiusdem tumuli gratia primum invecta, inde in Siciliam transgressa atque inter primas donata Italiae, et iam ad Morinos usque pervecta ac tributarium etiam detinens solum, ut gentes vectigal et pro umbra

7 pendant. Dionysius prior Siciliae tyrannus Regium in urbem transtulit eas domus suae miraculum, ubi postea factum gymnasium; nec potuisse in amplitudinem augescere aut alias fuisse in Italia omni

8 ac Spaniam [4] apud auctores invenitur. IV. Hoc actum circa captae urbis aetatem; tantumque postea honoris increvit ut mero infuso enutriantur: conpertum id maxime prodesse radicibus, docuimusque etiam arbores vina potare!

[1] *Mayhoff*: et. [2] *V.l.* promissa. [3] in *add. Mayhoff.*
[4] Italia omni ac Spaniam *Warmington coll. Theophr.*: Italia ac nominatim Hispania.

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[a] The *vectigal solarium* imposed on the provinces.
[b] *Spaniam* or *Hispania* ('Spain')—so MSS.—is a mistranslation or misreading of Theophrastus' σπανίαν ('rare') δὲ καὶ ἐν τῇ Ἰταλίᾳ πάσῃ.
[c] By the Gauls, 390 B.C.

and the legs of our tables made of the same ivory. It is stated that the Gauls, imprisoned as they were by the Alps as by a then insuperable bulwark, first found a motive for overflowing into Italy from the circumstance that a Gallic citizen from Switzerland named Helico, who had sojourned at Rome on account of his skill as an artificer, had brought with him when he came back some dried figs and grapes and some samples of oil and wine; and consequently we may pardon them for having sought to obtain these things even by means of war.

Trees introduced from abroad: the plane.

III. But who would not be justifiably surprised to hear that a tree has been procured from another clime merely for the sake of shade? This tree is the plane, which was first imported into the Ionian Sea as far as the island of San Domenico to plant over the tomb of Diomede, and which crossed from there to Sicily and was one of the first trees bestowed on Italy, and which has now travelled as far as Belgium and actually occupies soil that pays tribute [a] to Rome, so that the tribes have to pay rent even for shade. The elder Dionysius, the tyrant of Sicily, imported plane-trees to the city of Reggio as a marvel to adorn his palace, on the site where afterwards a gymnasium was built; and it is found in the authorities that these trees were not able to grow to full size, and that in all Italy there were no others except the 'Spania.' [b] IV. This took place at about the period of the capture of Rome; [c] and so much honour has since accrued to plane-trees that their growth is encouraged by having wine poured on them, as it has been found that this is of the greatest benefit to the roots, and we have taught even trees to be wine-bibbers!

9 V. Celebratae sunt:[1] primum in ambulatione
Academiae Athenis cubitorum XXXIII radice ramos
antecedente; nunc est clara in Lycia fontis gelidi
socia amoenitate, itineri adposita domicilii modo, cava
octoginta atque unius pedum specu, nemorosa vertice
et se vastis protegens ramis arborum instar, agros
longis obtinens umbris, ac ne quid desit speluncae
imagini, saxea intus crepidinis corona muscosos
complexa pumices, tam digna miraculo ut Licinius
Mucianus ter consul et nuper provinciae eius legatus
prodendum etiam posteris putaverit epulatum intra
eam se cum duodevicensimo comite, large ipsa toros
praebente frondis, ab omni alflatu securum, oblectante[2]
imbrium per folia crepitu[3] laetiorem quam marmorum
nitore, picturae varietate, laquearium auro, cubuisse
10 in eadem. aliud exemplum Gai principis in Veliterno
rure mirati unius tabulata laxeque ramorum trabibus
scamna patula, et in ea epulati, cum ipse pars esset
umbrae, quindecim convivarum ac ministerii capace
11 triclinio, quam cenam appellavit ille nidum. est
Gortynae in insula Creta iuxta fontem platanus una

[1] Celebrata est *Sillig.*
[2] *Detlefsen* (captantem *Pintianus*): obstantem.
[3] *Detlefsen*: crepitum.

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[a] A reference to the emperor's great height and obesity.

V. Famous plane-trees are: (1) one that grew in the walks of the Academy at Athens, the roots of which were 50 feet long and spread wider than the branches; (2) at the present day there is a celebrated plane in Lycia, allied with the amenity of a cool spring; it stands by the roadside like a dwelling-house, with a hollow cavity inside it 81 feet across, forming with its summit a shady grove, and shielding itself with vast branches as big as trees and covering the fields with its long shadows, and so as to complete its resemblance to a grotto, embracing inside it mossy pumice-stones in a circular rim of rock—a tree so worthy to be deemed a marvel that Licinius Mucianus, who was three times consul and recently lieutenant-governor of the province, thought it worth handing down to posterity also that he had held a banquet with eighteen members of his retinue inside the tree, which itself provided couches of leafage on a bounteous scale, and that he had then gone to bed in the same tree, shielded from every breath of wind, and receiving more delight from the agreeable sound of the rain dropping through the foliage than gleaming marble, painted decorations or gilded panelling could have afforded. (3) Another instance is connected with the Emperor Caligula, who on an estate at Velletri was impressed by the flooring of a single plane-tree, and benches laid loosely on beams consisting of its branches, and held a banquet in the tree—himself constituting a considerable portion of the shadow [a]—in a dining-room large enough to hold fifteen guests and the servants: this dining-room the emperor called his 'nest.' (4) There is a single plane-tree at the side of a spring at Gortyn in the island of Crete which is celebrated in records written

Famous plane-trees.

insignis utriusque linguae monimentis, numquam folia dimittens, statimque et Graeciae fabulositas superfuit Iovem sub ea cum Europa concubuisse, ceu vero non alia eiusdem generis esset in Cypro! sed ex ea primum in ipsa Creta, ut est natura hominum novitatis avida, platani satae regeneravere vitium, quandoquidem commendatio arboris eius non alia maior est quam soles aestate arcere, hieme admittere.

12 inde in Italiam quoque ac suburbana sua Claudio principe Marcelli Aesernini libertus sed qui se potentiae causa Caesaris libertis adoptasset, spado Thessalicus praedives, ut merito dici posset is quoque Dionysius, transtulit id genus. durantque et in Italia portenta terrarum praeter illa scilicet quae ipsa excogitavit Italia.

13 VI. Namque et chamaeplatani vocantur coactae brevitatis, quoniam arborum etiam abortus invenimus; hoc quoque ergo in genere pumilionum infelicitas dicta erit. fit autem et serendi genere et recidendi. primus C. Matius ex equestri ordine, divi Augusti amicus, invenit nemora tonsilia intra hos LXXX annos.

14 VII. Peregrinae et cerasi Persicaeque et omnes quarum Graeca nomina aut aliena; sed quae ex iis

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[a] *I.e.* lack of the natural property of losing its foliage in winter.

both in Greek and Latin, as never shedding its leaves; and a typical Greek story about it has come down from early times, to the effect that underneath it Jupiter lay with Europa—just as if really there were not another tree of the same species in the island of Cyprus! Slips from this tree, however, planted first in Crete itself—so eager is human nature for a novelty—reproduced the defect:[a] for defect it was, because the plane has no greater recommendation than its property of warding off the sun in summer and admitting it in winter. During the principate of Claudius an extremely wealthy Thessalian eunuch, who was a freedman of Marcellus Aeserninus but had for the sake of obtaining power got himself enrolled among the freedmen of the emperor, imported this variety of plane-tree from Crete into Italy and introduced it at his country estate near Rome—so that he deserves to be called another Dionysius! And these monstrosities from abroad still last on in Italy also, in addition, that is, to those which Italy has devised for herself.

VI. For there is also the variety called the ground-plane, stunted in height—since we have discovered the art of producing abortions even in trees, and consequently even in the tree class we shall have to speak of the unhappy subject of dwarfs. The ground-plane is produced by a method of planting and of lopping. Clipped arbours were invented within the last 80 years by a member of the Equestrian order named Gaius Matius, a friend of his late Majesty Augustus. *The dwarf-plane.*

VII. The cherry and the peach and all the trees with Greek or foreign names are also exotic; but those among them which have been naturalized here

incolarum numero esse coepere dicentur inter frugiferas. in praesentia externas persequemur a salutari maxime orsi.

15 Malus Assyria, quam alii Medicam vocant, venenis medetur. folium eius est unedonis intercurrentibus spinis. pomum ipsum alias non manditur, odore praecellit foliorum quoque, qui transit in vestes una conditas[1] arcetque animalium noxia. arbor ipsa omnibus horis pomifera est, aliis cadentibus, aliis
16 maturescentibus, aliis vero subnascentibus. temptavere gentes transferre ad sese propter remedii praestantiam fictilibus in vasis, dato per cavernas radicibus spiramento (qualiter omnia transitura longius seri artissime transferrique meminisse conveniet, ut semel quaeque dicantur); sed nisi apud Medos et in Perside nasci noluit. hoc est cuius grana Parthorum proceres incoquere diximus esculentis commendandi halitus gratia. nec alia arbor laudatur in Medis.

17 VIII. Lanigeras Serum in mentione gentis eius narravimus, item Indiae arborum magnitudinem. unam e peculiaribus Indiae Vergilius celebravit hebenum, nusquam alibi nasci professus. Herodotus eam Aethiopiae intellegi maluit, in tributi vicem

[1] *Detlefsen*: conditus.

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[a] *Georgics* II. 116 f.

[b] Herodotus says 200 logs, III. 97. The term 'ebony' was and still is applied to many different hard woods imported into European countries.

will be specified among the fruit-trees. For the present we will go through the real exotics, beginning with the one most valuable for health.

The citron or Assyrian apple, called by others the Median apple, is an antidote against poisons. It has the leaves of the strawberry-tree, but with prickles running among them. For the rest, the actual fruit is not eaten, but it has an exceptionally strong scent, which belongs also to the leaves, and which penetrates garments stored with them and keeps off injurious insects. The tree itself bears fruit at all seasons, some of the apples falling while others are ripening and others just forming. Because of its great medicinal value various nations have tried to acclimatize it in their own countries, importing it in earthenware pots provided with breathing holes for the roots (and similarly, as it will be convenient to record here so that each of my points may be mentioned only once, all plants that are to travel a specially long distance are planted as tightly as possible for transport); but it has refused to grow except in Media and Persia. It is this fruit the pips of which, as we have mentioned, the Parthian grandees have cooked with their viands for the sake of sweetening their breath. And among the Medes no other tree is highly commended. *The citron.* XII. 278.

VIII. We have already described the wool-bearing trees of the Chinese in making mention of that race, and we have spoken of the large size of the trees in India. One of those peculiar to India, the ebony, is spoken of in glowing terms by Virgil,[a] who states that it does not grow in any other country. Herodotus,[b] however, prefers it to be ascribed to Ethiopia, stating that the Ethiopians used to pay as tribute to the VI. 54. VII. 21. *Indian trees: ebony.*

regibus Persidis e materia eius centenas phalangas tertio quoque anno pensitasse Aethiopas cum auro et
18 ebore prodendo. non omittendum id quoque, vicenos dentes elephantorum grandes, quoniam ita significavit, Aethiopas ea de causa pendere solitos. tanta ebori auctoritas erat urbis nostrae cccx anno: tunc enim auctor ille historiam eam condidit Thuriis in Italia, quo magis mirum est quod eidem credimus, qui Padum amnem vidisset neminem ad id tempus Asiae Graeciaeque visum. cognita[1] Aethiopiae
19 forma, ut diximus, nuper allata Neroni principi raram arborem Meroen usque a Syene fine imperii per $\overline{\text{DCCCCLXXXXVI}}$ p. nullamque nisi palmarum generis esse docuit. ideo fortassis in tributi auctoritate tertia res fuerit hebenus.

20 IX. Romae eam Magnus Pompeius triumpho Mithridatico ostendit. accendi Fabianus negat, uri[2] tamen odore iucundo. duo genera eius: rarum id quod melius, arboreum, tereti[3] et enodi materie[4] nigri splendoris ac vel sine arte protinus iucundi, alterum fruticosum cytisi modo et tota India dispersum.

21 X. Est ibi et spina similis sed deprehensa vel lucernis igni protinus transiliente.

[1] *V.l.* visu (*aut* ut sibi, *aut* aut sibi) cognitum.
[2] *Rackham*: uritur.
[3] *Detlefsen*: iure (purae *Madvig*).
[4] *V.l.* enodis materiae.

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[a] 446 B.C.; but Thurii, where Herodotus settled to escape from political disorders at Halicarnassus, his native city, was not colonized by Greek settlers till 443 B.C.

[b] *I.e.*, apparently, a thin sheet of this wood is translucent.

Kings of Persia every three years a hundred logs of ebony, together with gold and ivory. Nor also should we omit the fact, since that author indicates it, that the Ethiopians used to pay twenty large elephant tusks on the same account. So high was the esteem in which ivory was held in the 310th year[a] of our city, the date at which that author composed his history at Thurii in Italy; which makes all the more surprising the statement which we accept on his authority, that nobody of Asia or Greece had hitherto been seen who had ever seen the river Po. The exploration of the geography of Ethiopia, which as we have said had lately been reported to the Emperor Nero, showed that over a space of 1,996 miles from Syene on the frontier of the empire to Meroe trees are rare, and there are none except of the palm species. That is possibly the reason why ebony was the third most important item in the tribute paid. Hdt. III. 115. VI. 181.

Varieties of ebony.

IX. Ebony was exhibited at Rome by Pompey the Great on the occasion of his triumph over Mithridates. According to Fabius ebony does not give out a flame, yet burns with an agreeable scent. It is of two kinds: the better one, which grows as a tree, is rare—it is of a smooth substance and free from knots, and of a shiny black colour that is pleasing to the eye even in the natural state without the aid of art; whereas the other grows as a shrub like the cytisus, and is spread over the whole of India.

The Indian thorn.

X. In India there is also a thorn the wood of which resembles ebony, but can be detected even by the flame of a lantern, as the light at once shines through.[b]

Nunc eas exponemus quas mirata est Alexandri Magni victoria orbe eo patefacto.

22 XI. Ficus ibi eximia pomo, se ipsa semper serens, vastis diffunditur ramis quorum imi in terram adeo curvantur ut annuo spatio infigantur novamque sibi propaginem faciant circa parentem in orbem quodam opere topiario. intra saepem eam aestivant pastores opacam pariter et munitam vallo arboris, decora specie subter intuenti proculve fornicato ambitu.
23 superiores eiusdem rami in excelsum emicant silvosa multitudine vasto matris corpore, ut LX [1] passus pleraeque orbe colligant, umbra vero bina stadia operiant. foliorum latitudo peltae effigiem Amazonicae habet; ea causa fructum integens crescere prohibet, rarusque est [2] nec fabae magnitudinem excedens, sed per folia solibus coctus praedulcis sapore et dignus miraculo arboris. gignitur circa Acesinen maxime amnem.

24 XII. Maiore alia pomo et suavitate praecellentiore,[3] quo sapientes Indorum vivunt. folium alas avium imitatur longitudine trium cubitorum, latitudine duum. fructum cortice emittit [4] admirabilem suci dulcedine, ut uno quaternos satiet. arbori nomen

[1] XL? *Mayhoff.*
[2] est *add. edd.*: rarus is parvusque? *Mayhoff.*
[3] *Rackham* (*vel* qua *pro* quo): Major . . . praecellentior.
[4] *Gelenius*: mittit.

[a] *I.e.* the banyan.

We will now describe the trees that aroused the wonder of the victorious expedition of Alexander the Great when that part of the world was first revealed.

The Indian banyan.

XI. The Indian fig-tree [a] bears exceptionally fine fruit, and it is self-propagating, as it spreads its branches to an enormous width and the bottom ones bend down to the earth so heavily that in a year's time they take root, and produce for themselves a fresh offspring planted in a circle round the parent tree like the work of an ornamental gardener. Inside this bower the shepherds dwell in summer, as it is at once shaded and protected by the fence of the tree—a very attractive sight when looked at from below or from a distance, with its vaulted dome. Its higher branches, however, shoot upward to a great height from the main bulk of the mother tree, forming an extensive grove, so as in many cases to enclose a circle sixty yards across, while they cover with their shade a space of a quarter of a mile. The broad leaves have the shape of an Amazon's shield; consequently they cover over the fruit and prevent it from growing, and it is scanty and not larger in size than a bean; but as it is ripened by the rays of the sun shining through the foliage it has an extremely sweet taste, and is worthy of the marvellous tree that produces it. This fig grows mostly in the neighbourhood of the river Chenaub.

The banana.

XII. There is another fig the fruit of which is larger and superior in flavour; the sages of India live on it. The leaf of this tree resembles birds' wings, and is a yard and a half long and a yard broad. The fruit grows out of the bark, and is remarkable for the sweetness of its juice; one bunch is enough for four

palae, pomo arienae. plurima est in Sydracis, expeditionum Alexandri termino. est et alia similis huic, dulcior pomo, sed interaneorum valetudini infesta; edixerat Alexander ne quis agminis sui id pomum attingeret.

25 XIII. Genera arborum Macedones narravere maiore ex parte sine nominibus. est et terebintho similis cetera, pomo amygdalis, minore tantum magnitudine, praecipuae suavitatis, in Bactris utique. hanc aliqui terebinthon esse proprii generis potius quam similem ei putaverunt. sed unde vestes lineas faciunt foliis moro similis, calyce pomi cynorrhodo. serunt eam in campis, nec est gratior ullarum[1] prospectus.

26 XIV. Oliva Indiae sterilis praeterquam oleastri fructus. passim vero quae piper gignunt iuniperis nostris similes, quamquam in fronte Caucasi solibus opposita gigni tantum eas aliqui tradidere. semina a iunipero distant parvulis siliquis, quales in phasiolis videmus; hae priusquam dehiscant decerptae tostaeque sole faciunt quod vocatur piper longum, paulatim vero dehiscentes maturitate ostendunt candidum piper, quod deinde tostum solibus colore rugisque
27 mutatur. verum et his sua iniuria est, atque caeli

[1] *V.l.* villarum, *Pintianus* vinearum.

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[a] The banana.
[b] Perhaps the cotton-tree; see also §§ 38–39.
[c] The name here denotes the Hindu Kush.

people. The tree is called the pala,[a] and the fruit ariena. It is most frequent in the territory of the Sydraci, which was the farthest point reached by the expeditions of Alexander. There is also another tree resembling this one, the fruit of which is sweeter, but causes derangement of the bowels. Alexander issued an order in advance forbidding any member of his expedition to touch it.

XIII. The Macedonians have given accounts of kinds of trees that for the most part have no names. There is also one that resembles the terebinth in every other respect but the fruit of which is like an almond, though smaller, and is remarkably sweet, at all events when grown in Bactria. This tree has been considered by some persons to be a special kind of terebinth rather than another plant resembling it. The tree[b] from which they make linen for clothing resembles a mulberry by its leaves, but the calyx of the fruit is like that of a dog-rose. It is grown in the plains, and no other plantations add more to the beauty of the landscape. *The flax-tree*

XIV. The olive-tree of India is barren, except for the fruit of the wild olive. But trees resembling our junipers that bear pepper occur everywhere, although some writers have reported that they only grow on the southern face of the Caucasus.[c] The seeds differ from those of the juniper by being in small pods, like those which we see in the case of the kidney-bean; these pods when plucked before they open and dried in the sun produce what is called 'long pepper,' but if left to open gradually, when ripe they disclose white pepper, which if afterwards dried in the sun changes colour and wrinkles up. Even these products, however, have their own special *The pepper-tree.*

intemperie carbunculant fiuntque semina cassa et inania, quod vocant bregma, sic Indorum lingua significante mortuum. hoc ex omni genere asperrimum est levissimumque et pallidum. gratius nigrum, lenius utroque candidum.

28 Non est huius arboris radix, ut aliqui existimavere, quod vocant zingiberi, alii vero zinpiberi, quamquam sapore simile. id enim in Arabia atque Trogodytica in villis[1] nascitur parva herba[2]: radice candida. celeriter ea cariem sentit, quamvis in tanta amaritudine. pretium eius in libras X vi. piper longum facillime adulteratur Alexandrino sinapi. emitur in libras X
29 xv, album X vii, nigrum X iiii. Usum eius adeo placuisse mirum est: in aliis quippe. suavitas cepit, in aliis species invitavit, huic nec pomi nec bacae commendatio est aliqua. sola placere amaritudine, et hanc in Indos peti! quis ille primus experiri cibis voluit aut cui in appetendi aviditate esurire non fuit satis? utrumque silvestre gentibus suis est et tamen pondere emitur ut aurum vel argentum. piperis arborem iam et Italia habet maiorem myrto nec absimilem. amaritudo grano eadem quae piperi murteo[3] credatur esse: deest tosto[4] illa maturitas

[1] vilius *Salmasius*, in silvis? *Mayhoff.*
[2] *V.l.* parvae herbae.
[3] *Detlefsen coll.* xv 118: musteo.
[4] *Rackham*: tosta.

[a] This was not the case, but much was imported by way of Arabia and Trogodytica, i.e. N.E. Africa.

infirmity, and inclement weather shrivels them up and turns the seeds into barren husks, called *bregma*, which is an Indian word meaning 'dead.' Of all kinds of pepper this is the most pungent and the lightest, and it is pale in colour. Black pepper is more agreeable, but white pepper is of a milder flavour than either the black or the 'long' pepper.

The root of the pepper-tree is not, as some people have thought, the same as the substance called ginger, or by others zinpiberi, although it has a similar flavour. Ginger is grown on farms in Arabia and Cave-dwellers' Country[a]; it is a small plant with a white root. The plant is liable to decay very quickly, in spite of its extreme pungency. Its price is six denarii a pound. It is easy to adulterate long pepper with Alexandrian mustard. Long pepper is sold at 15 denarii a pound, white pepper at 7, and black at 4. It is remarkable that the use of pepper has come so much into favour, as in the case of some commodities their sweet taste has been an attraction, and in others their appearance, but pepper has nothing to recommend it in either fruit or berry. To think that its only pleasing quality is pungency and that we go all the way to India to get this! Who was the first person who was willing to try it on his viands, or in his greed for an appetite was not content merely to be hungry? Both pepper and ginger grow wild in their own countries, and nevertheless they are bought by weight like gold or silver. Italy also now possesses a pepper-tree that grows larger than a myrtle, which it somewhat resembles. Its grains have the same pungency as that believed to belong to myrtle-pepper, but when dried it lacks the ripeness that the other has, and consequently has not the same Ginger.

ideoque et rugarum colorisque similitudo. adulteratur iuniperi bacis mire vim trahentibus, in pondere quidem multis modis.

30 XV. Est etiamnum in India piperis grani[1] simile quod vocatur caryophyllon, grandius fragiliusque; tradunt in Indica loto id gigni; advehitur odoris gratia. fert et spina[2] piperis similitudinem praecipua amaritudine, foliis parvis densisque cypri modo, ramis trium cubitorum, cortice pallido, radice lata lignosaque buxei coloris. hac in aqua cum semine excocta in aereo vase medicamentum fit quod vocatur
31 lycion. ea spina et in Pelio monte nascitur adulteratque medicamentum, item asphodeli radix aut fel bubulum aut absinthium, vel rhus vel amurca. aptissimum medicinae quod est spumosum; Indi in utribus camelorum aut rhinocerotum id mittunt. spinam ipsam in Graecia quidam pyxacanthum Chironium vocant.

32 XVI. Et macir ex India advehitur, cortex rubens radicis magnae, nomine arboris suae; qualis sit ea inconpertum habeo. corticis melle decocti usus in medicina ad dysintericos praecipuus habetur.

XVII. Saccharon et Arabia fert, sed laudatius India. est autem mel in harundinibus collectum, cummium modo candidum, dentibus fragile, amplissimum nucis abellanae magnitudine, ad medicinae tantum usum.

[1] *V.l.* granis. [2] *V.l.* in spinis.

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[a] The *Eugenia caryophyllata* of modern botany.

[b] The *Lawsonia inermis.*

[c] *I.e.* the juice from the root, stem and berries of several species of Raisin-barberry.

[d] Probably 'Tellicherry bark,' from *Holarrhena antidysenterica.*

wrinkles and colouring either. Pepper is adulterated with juniper berries, which absorb its pungency in a remarkable manner, and in the matter of weight there are several ways of adulterating it.

Other Indian trees.

XV. There is also in India a grain resembling that of pepper, but larger and more brittle, called the caryophyllon,[a] which is reported to grow on the Indian lotus-tree; it is imported here for the sake of its scent. There is also a thorn-bush bearing an extremely bitter fruit that has a resemblance to pepper; this shrub has small thickly clustering leaves like the cyprus[b]; the branches are 4½ feet long, the bark of a pale colour, and the root wide-spreading and woody, of the colour of box. This root boiled in water with the seed in a copper vessel produces the medicine called lycion. The thorn in question also grows on Mount Pelion, where it is used for mixing with a drug, as also are the root of the asphodel, ox-gall, wormwood, sumach and the lees of olive oil. The best lycion for medicinal purposes is the kind that makes a froth; this[c] is imported from India in leather bottles made of camel skin or rhinoceros hide. The shrub itself is sometimes known in Greece under the name of Chiron's buckthorn.

Indian bark.

XVI. Another substance imported from India is macir, the red bark[d] of the large root of a tree of the same name, which I have been unable to identify. This bark boiled with honey is considered in medicine to be a valuable specific for dysentery.

'Sugar.'

XVII. Arabia also produces tabaschir, but that grown in India is more esteemed. It is a kind of honey that collects in reeds, white like gum, and brittle to the teeth; the largest pieces are the size of a filbert. It is only employed as a medicine.

33 XVIII. Contermina Indis gens Ariana appellatur, cui spina lacrima pretiosa murrae simili, difficili accessu propter aculeos adnexos. ibi et frutex
34 pestilens . . .[1] raphani folio lauri, odore equos invitans, qui paene equitatu orbavit Alexandrum primo introitu. quod et in Gedrosis accidit item laureo folio; et ibi spina tradita est cuius liquor adspersus oculis caecitatem inferret omnibus animalibus. nec non et herba praecipui odoris referta minutis serpentibus quarum ictu protinus moriendum esset. Onesicritus tradit in Hyrcaniae convallibus fico similes esse arbores quae vocentur occhi, ex quibus defluat mel horis matutinis duabus.

35 XIX. Vicina est Bactriana, in qua bdellium laudatissimum. arbor est nigra magnitudine oleae, folio roboris, fructu caprifici: ipsi natura quae cummi, alii brochon appellant, alii malacham, alii maldacon, nigrum vero et in offas convolutum hadrobolon. esse autem debet tralucidae simile cerae, odoratum et, cum frietur, pingue, gustu amarum citra acorem. in sacris vino perfusum odoratius. nascitur et in Arabia Indiaque et Media ac Babylone. aliqui peraticum vocant ex Media advectum; fragilius hoc
36 et crustosius amariusque, at Indicum umidius et

[1] *Lacunam Ian*: ⟨magnitudinem non excedens⟩? *coll.* § 23 *Mayhoff.*

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[a] Perhaps the text is to be emended: 'a poisonous plant not larger than a radish.'

[b] A resinous gum obtained from *Balsamodendron Mukul*, a kind of myrrh; for another view cf. Vol. VII, Index of Plants.

XVIII. On the frontier of India is a race called the Arian, which has a thorn-bush that is valuable for the juice that it distils, resembling myrrh. It is difficult to get at this bush because it is hedged with thorns. In the same district there is also a poisonous bush-radish,[a] with the leaf of a bay-tree, the smell of which attracts horses, and nearly robbed Alexander of his cavalry when he first entered the region. This also happened in Gedrosia as well, on account of the foliage of the bay-trees; and in the same district a thorn was reported the juice of which sprinkled on the eyes caused blindness in all animals. There was also a plant with a very strong scent, that was full of tiny snakes whose bite was instantly fatal. Onesicritus reports that in the valleys of Hyrcania there are trees resembling the fig, named occhus-trees, which for two hours every morning drip honey.

Trees of countries adjacent to India.

XIX. Adjoining India is the Bactrian country, in which is produced the highly esteemed bdellium.[b] The tree is black in colour, and the size of the olive; its leaf resembles that of the oak and its fruit that of the wild fig. The subsistence of the fruit is like gum; one name for it is brochos, another malacha, and another maldacos, while a black variety which is rolled up into cakes has the name of hadrobolos. It ought to be transparent like wax, to have a scent, to exude grease when crumbled, and to have a bitter taste, though without acidity. When used in religious ritual it is steeped in wine, which makes its scent more powerful. This tree is native to Arabia and India, and also to Media and Babylon. Some people give to the bdellium imported from Media the name of peraticum; this kind is more brittle and also harder and more bitter than the others, whereas the Indian

Trees of Bactriana.

cumminosum. adulteratur amygdala nuce, cetera eius genera cortice et scordasti—ita vocatur arbor aemulo cummi. sed deprehenduntur—quod semel dixisse et in ceteros odores satis sit—odore, colore, pondere, gustu, igne. Bactrio nitor siccus multique candidi ungues, praeterea suum pondus quo gravius esse aut levius non debeat. pretium sincero in libras X III.

37 XX. Gentes supra dictas Persis attingit. Rubro mari, quod ibi Persicum sinum[1] vocavimus, longe in terram aestus agente mira arborum natura: namque erosae sale, invectis derelictisque similes, sicco litore radicibus nudis polyporum modo amplexae steriles harenas spectantur. eaedem mari adveniente fluctibus pulsatae resistunt immobiles; quin et pleno aestu operiuntur totae, adparetque rerum argumentis asperitate aquarum illas ali. magnitudo miranda est, species similis unedoni, pomum amygdalis extra, intus contortis nucleis.

38 XXI. Tyros[2] insula in eodem sinu est, repleta silvis qua spectat orientem quaque et ipsa aestu maris perfunditur. magnitudo singulis arboribus fici, flos

[1] sinum *add.* ? *coll.* VI 108 *Mayhoff.*
[2] *V.l.* Tylos.

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[a] VI. 108. [b] Mangroves.
[c] Now Bahrein, cf. VI. 148.

sort is moister, and gummy. Almonds are used to adulterate Indian bdellium, but all the other sorts are adulterated also with the bark of scordastum, that being the name of a tree that resembles the gum. But these adulterations can be detected—and it must be enough to state this once for all, to apply to all other perfumes as well—by smell, colour, weight, taste and the action of fire. The Bactrian bdellium is shiny and dry, and has a number of white spots like finger-nails; and also it has a specific weight of its own and ought not to be heavier or lighter than this. The price of pure bdellium is 3 denarii a pound.

Trade adulteration of spices; its detection.

XX. Adjoining the races above mentioned is Persia. On the Red Sea, which at this point we have called [a] the Persian Gulf, the tides of which are carried a long way inland, the trees [b] are of a remarkable nature; for they are to be seen on the coast when the tide is out, embracing the barren sands with their naked roots like polypuses, eaten away by the salt and looking like trunks that have been washed ashore and left high and dry. Also these trees when the tide rises remain motionless although beaten by the waves; indeed at high water they are completely covered, and the evidence of the facts clearly proves that this species of tree is nourished by the brackish water. They are of marvellous size, and in appearance they resemble the strawberry-tree, but their fruit is like almonds outside and contains a spiral kernel.

Trees of Iran.

XXI. In the same gulf is the island of Tyros,[c] which is covered with forests in the part facing east, where it also is flooded by the sea at high tide. Each of the trees is the size of a fig-tree; they have a flower with

Trees of the Persian islands: the cotton-tree; other Eastern trees supplying cloth.

suavitate inenarrabili, pomum lupino simile, propter
asperitatem intactum omnibus animalibus. eiusdem
insulae [1] excelsiore suggestu lanigerae arbores alio
modo quam Serum; his folia infecunda quae, ni
minora essent, vitium poterant videri. ferunt mali
cotonei amplitudine cucurbitas quae maturitate
ruptae ostendunt lanuginis pilas ex quibus vestes
39 pretioso linteo faciunt. XXII. arborem [2] vocant gos-
sypinum, fertiliore etiam Tyro minore, quae distat x̄ p.
Iuba circa fruticem lanugines esse tradit, linteaque
ea Indicis praestantiora, Arabiae autem arborem [2] ex
qua vestes faciant cynas vocari, folio palmae simili.
sic Indos suae arbores vestiunt. in Tyris autem et
alia arbor floret albae violae specie, sed magnitudine
quadruplici, sine odore, quod miremur in eo tractu.
40 XXIII. Est et alia similis, foliosior tamen, roseique
floris, quem noctu conprimens aperire incipit solis ex-
ortu, meridie expandit: incolae dormire eum dicunt.
fert eadem insula et palmas oleasque ac vites et
cum reliquo pomorum genere ficos. nulli arborum
folia ibi decidunt; rigaturque gelidis fontibus et
imbres accipit.

[1] ⟨in⟩ insulae? *Mayhoff.*
[2] arborem *edd.*: arbores.

[a] Cotton-trees. [b] *Serica*, silk.

an indescribably sweet scent and the fruit resembles a lupine, and is so prickly that no animal can touch it. On a more elevated plateau in the same island there are trees [a] that bear wool, but in a different manner to those [b] of the Chinese, as the leaves of these trees have no growth on them, and might be thought to be vine-leaves were it not that they are smaller; but they bear gourds of the size of a quince, which when they ripen burst open and disclose balls of down from which an expensive linen for clothing is made. XXII. Their name for this tree is the gossypinus; it also grows in greater abundance on the smaller island of Tyros, which is ten miles distant from the other. Juba says that this shrub has a woolly down growing round it, the fabric made from which is superior to the linen of India. He also says that there is an Arabian tree called the cynas from which cloth is made, which has foliage resembling a palm-leaf. Similarly the natives of India are provided with clothes by their own trees. But in the Tyros islands there is also another tree with a blossom like a white violet but four times as large; it has no scent, which may well surprise us in that region of the world.

An evergreen tree.

XXIII. There is also another tree which resembles this one but has more foliage and a rose-coloured blossom, which it closes at nightfall and begins to open at sunrise, unfolding it fully at noon: the natives speak of it as going to sleep. The same island also produces palm-trees, olives and vines, as well as figs and all the other kinds of fruit-trees. None of the trees there sheds its leaves; and the island is watered by cold springs, and has a considerable rainfall.

41 XXIV. Vicina iis Arabia flagitat quandam generum distinctionem, quoniam fructus constant radice, frutice, cortice, suco, lacrima, ligno, surculo, flore, folio, pomo.

XXV. Radix et folium Indis in maximo pretio. radix costi gustu fervens, odore eximia, frutice alias inutili. primo statim introitu amnis Indi in Patale insula duo eius genera, nigrum et quod melius candicans: pretium in libras X vs.

42 XXVI. De folio nardi plura dici par est ut principali in unguentis. frutex est gravi et crassa radice sed brevi ac nigra fragilique, quamvis pingui, situm redolente, ut cypiros, aspero sapore, folio parvo densoque. cacumina in aristas se spargunt, ideo gemina dote nardi spicas ac folia celebrant. alterum eius genus apud Gangen nascens damnatur in totum
43 ozaenitidos nomine, virus redolens. adulteratur et pseudonardo herba quae ubique nascitur crassiore atque latiore folio et colore languido in candidum vergente, item sua radice permixta ponderis causa et cummi spumaque argenti aut stibi ac cypiro cypirive cortice. sincerum quidem levitate deprehenditur et

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[a] The modern *Saussurea lappa*.

[b] The name may really be from Ozene (Ujjain), a town on the trade-route between the Ganges and the west coast of India.

XXIV. The country neighbouring on these islands, Arabia, calls for some detailed account of its products —inasmuch as the parts of trees that are utilized include the root, the trunk, the bark, the juice, the gum, the wood, the shoots, the blossom, the leaves and the fruit. *Utility trees of Arabia.*

XXV. In India a root and a leaf are held in the highest value. The root is that of the costus,[a] which has a burning taste and an exquisite scent, though in other respects the plant is of no use. In the island of Patale just in the mouth of the river Indus, there are two kinds of costus plant, the black and the white; the latter is the better; it sells at 5½ denarii a pound. *The costus of India.*

XXVI. About the leaf, which is that of the nard, it is proper to speak at greater length, as it holds a foremost place among perfumes. The nard is a shrub, the root of which is heavy and thick but short and black, and although oily, brittle; it has a musty smell like the gladiolus, and an acrid taste; the leaves are small, and grow in clusters. The shoots of the nard sprout into ears, and consequently both the spikes and the leaves of the nard are famous—a two-fold product. Another kind of nard growing by the Ganges is entirely ruled out by its name, 'putrid[b] nard,' having a poisonous smell. Nard is also adulterated with a plant called bastard nard, which grows everywhere, and has a thicker and broader leaf and a sickly colour inclining to white; and also by being mixed with its own root to increase the weight, and with gum and silver-spume or antimony and gladiolus or husk of gladiolus. Unadulterated nard can be detected by its light weight and its ruddy colour and sweet scent and particularly by *Nard.*

colore rufo odorisque suavitate et gustu maxime siccante os sapore iucundo.

Pretium spicae in libras X c. folii divisere annonam
44 amplitudine: hadrosphaerum vocatur maioribus pilulis X xxxx; quod minore folio est mesosphaerum appellatur, emitur X lx; laudatissimum microsphaerum e minimis foliis, pretium eius X lxxv. odoris gratia omnibus, maior recentibus.
45 nardo colos, si inveteravit, nigrior meliori.[1] in nostro orbe proxime laudatur Syriacum, mox Gallicum, tertio loco Creticum, quod aliqui agrion vocant, alii phun, folio olusatri, caule cubitali, geniculato, in purpuram[2] albicante, radice obliqua villosaque et imitante avium pedes. baccaris vocatur nardum rusticum, de quo dicemus inter flores. sunt autem omnia ea herbae praeter Indicum. ex iis Gallicum et cum radice vellitur abluiturque vino, siccatur in umbra, alligatur fasciculis in charta, non multum ab Indico differens, Syriaco tamen levius. pretium
46 X iii. in his probatio una ne sint fragilia et arida potius quam sicca folia. cum Gallico nardo semper nascitur herba quae hirculus vocatur a gravitate odoris et similitudine, qua maxime adulteratur; distat quod sine cauliculo est et quod minoribus foliis, quodque radicis neque amarae neque odoratae.

[1] *Mueller*: nigriori melior.
[2] *Ian*: purpura.

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[a] The three plants classed as nards that follow are really valerians; for a fuller discussion of these plants, see Vol. VII, Index of Plants, s.v. *Baccaris* and *Nardus*.
[b] Greek, 'wild' and 'self-sown.'

its taste, which dries up the mouth and leaves a pleasant flavour.

The price of nard is 100 denarii a pound. The nard-leaf market is graded according to the size of the leaf: the kind called hadrosphaerum in larger pills costs 40 denarii; the smaller-leaved sort called mesosphaerum sells at 60 denarii; and the most highly spoken of, microsphaerum, is made of the smallest leaves and its price is 75 denarii. All the kinds have an agreeable scent, stronger when they are fresh. The better nard has a blacker colour, if it is old when gathered. In our part of the world [a] the next most highly praised kind is the Syrian, then that from Gaul, and in the third place is the Cretan, which some call agrion and others phun [b]; it has a leaf like that of alexanders, a stalk 18 inches long, knotted and coloured whitish purple, and a crooked hairy root resembling birds' claws. Wild nard is called baccaris; we shall speak about it XX. 135.
among flowers. All of these kinds of nard, however, are herbs except the Indian. Among them the Gallic kind is plucked with the root as well, and washed in wine, dried in a shady place, and done up with paper in small parcels; it does not differ much from the Indian nard, but it is lighter in weight than the Syrian. Its price is 3 denarii. In the case of these varieties the only way to test them is that the leaves must not be brittle and parched instead of merely dry. With Gallic nard there always grows the herb called 'little goat' because of its offensive smell, like the smell of a goat; it is very much employed to adulterate nard, from which it is distinguished by having no stem and smaller leaves, and by its root, which is not bitter and also has no smell.

47 XXVII. Nardi vim habet et asarum, quod et ipsum aliqui silvestre nardum appellant. est autem hederae foliis, rotundioribus tantum mollioribusque,[1] flore purpureo, radice Gallici nardi, semine acinorum saporis calidi ac vinosi, in montibus umbrosis bis anno florens. optimum in Ponto, proximum in Phrygia, tertium in Illyrico. foditur cum folia mittere incipit et in sole siccatur, celeriter situm trahens ac senescens. inventa nuper et in Thracia herba est cuius folia nihil ab Indico nardo distant.

48 XXVIII. Amomi uva in usu est ex[2] Indica vite labrusca, aut[3] ut alii existimavere, frutice tortuoso[4] palmi altitudine, carpiturque cum radice, manipulatim leniter conponitur, protinus fragile. laudatur quam maxime Punici mali foliis simile nec rugosis, colore rufo. secunda bonitas pallido, herbaceum peius, pessumumque candidum, quod et vetustate
49 evenit. pretium uvae in libras X LX, friato vero amomo X XLIIX. nascitur et in Armeniae parte quae vocatur Otene et in Media et in Ponto. adulteratur foliis punici[5] et cummi liquido, ut cohaereat convolvatque se in uvae modum.

Est et quae vocatur amomis, minus venosa atque durior ac minus odorata, quo apparet aut aliud esse aut colligi inmaturum.

[1] *An* minoribusque? *coll. Dioscoride Detlefsen.*
[2] ex *add. Dalec.*
[3] aut *add. Ian.*
[4] *Mayhoff coll.* § 49: montuoso *aut* myrtuoso.
[5] *Mayhoff*: Punicis.

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[a] Both *amomum* and *cardamomum* (now called cardamom) refer to *Elettaria cardamomum.*

[b] The plant really grew much further east, but much of it was imported through Armenia and Pontus.

XXVII. Hazelwort also has the property of nard, indeed some people actually call it 'wild nard.' It has the leaves of the ivy, only rounder and softer, a purple flower, the root of Gallic nard, and seed like grape-stones, which has a warm taste with a flavour of wine. On shady mountains it flowers twice a year. The best variety grows in Pontus, the next best in Phrygia and the third in Illyricum. When it begins to shed its leaves it is dug up and dried in the sun, as it quickly becomes mouldy and loses its strength. A plant has also lately been found in Thrace the leaves of which do not differ at all from the Indian nard. *Hazelwort.*

XXVIII. The clustered amomum[a] is much in use; it is obtained from the Indian wild-vine, or as other people have supposed from a twisted shrub a hand high, and it is plucked with its root and then gently pressed together into bundles, as it is liable to break at once. The kind most highly spoken of is the one with leaves like those of the pomegranate and devoid of wrinkles, coloured red. The second best kind is of a pale colour; the grass-coloured one is not so good, and the white kind is the worst; it also goes white with age. The price of clustered amomum is 60 denarii a pound, but as dust it fetches only 48 denarii. It grows in the part of Armenia called Otene, and also in Media and in Pontus.[b] It is adulterated with the leaves of the pomegranate and with liquid gum to make the leaves stick together and form a cluster like a bunch of grapes. *Amomum.*

There is also another substance called amomis, which is not so full of veins and is harder and has less scent, showing that it is either a different plant or amomum that has been gathered unripe. *Amomis.*

50 XXIX. Simile his et nomine et frutice cardamomum, semine oblongo. metitur eodem modo in Arabia. quattuor eius genera: viridissimum ac pingue, acutis angulis contumax frianti—hoc maxume laudatur, proximum e rufo candicans, tertium brevius atque nigrius, peius tamen varium et facile tritu odorisque parvi, qui in vero[1] costo vicinus esse debet. hoc et apud Medos nascitur. pretium optumi in libras X III.

51 XXX. Cinnamomo proxima gentilitas erat, ni prius Arabiae divitias indicari conveniret causasque quae cognomen illi felicis ac beatae dedere. principalia ergo in illa tus atque murra; haec et cum Trogodytis communis, tura praeter Arabiam nullis, ac ne
52 Arabiae quidem universae. in medio eius fere sunt Astramitae, pagus Sabaeorum, capite regni Sabota in monte excelso, a quo octo mansionibus distat regio eorum turifera Sariba appellata—hoc significare Graeci mysterium dicunt. spectat ortus solis aestivi, undique rupibus invia et a dextera mari scopulis
53 inaccesso. id solum e rubro lacteum traditur. silvarum longitudo est schoeni xx, latitudo dimidium

[1] in vero? *Mayhoff*: vero *aut* verus.

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[a] See § 48 note.

[b] Really it grew further east, but it was imported through Media and Arabia.

[c] Frankincense is obtained from species of *Boswellia*, myrrh from *Balsamodendron myrrha*.

XXIX. Resembling these substances both in name and in the shrub that produces it is cardamomum,[a] the seeds of which are oblong in shape. It is gathered in Arabia, in the same manner as amomum. It has four varieties: one very green and oily, with sharp corners and awkward to crumble—this is the kind most highly spoken of—the next sort a whitish red, the third shorter and of a colour nearer black, while an inferior kind is mottled and easily friable, and has little scent—in the true kind the scent ought to be near to that of costus. Cardamomum also grows in the country of the Medes.[b] The price of the best sort is 3 denarii a pound. *Cardamom.*

XXX. Next in affinity to cardamomum would have come cinnamomum, were it not convenient first to catalogue the riches of Arabia and the reasons that have given it the names of Happy and Blessed. The chief products of Arabia then are frankincense and myrrh[c]; the latter it shares also with the Cave-dwellers' Country, but no country beside Arabia produces frankincense, and not even the whole of Arabia. About in the middle of that country are the Astramitae, a district of the Sabaei, the capital of their realm being Sabota, situated on a lofty mountain; and eight days' journey from Sabota is a frankincense-producing district belonging to the Sabaei called Sariba—according to the Greeks the name means 'secret mystery.' The region faces north-east, and is surrounded by impenetrable rocks, and on the right hand side bordered by a seacoast with inaccessible cliffs. The soil is reported to be of a milky white colour with a tinge of red. The forests measure 20 *schoeni* in length and half that distance in breadth— *Frankincense.*

eius. schoenus patet Eratosthenis ratione stadia XL, hoc est p. $\overline{\text{V}}$, aliqui XXXII stadia singulis schoenis dedere. attolluntur colles alti, decurruntque et in plana arbores sponte natae. terram argillosam
54 esse convenit, raris fontibus ac nitrosis. attingunt et Minaei, pagus alius, per quos evehitur tus[1] uno tramite angusto. hi primi commercium turis fecere maximeque exercent, a quibus et Minaeum dictum est: nec praeterea Arabum alii turis arborem viderunt,[2] ac ne horum quidem omnes, feruntque $\overline{\text{III}}$ non amplius esse familiarum quae ius per successiones id sibi vindicent, sacros vocari ob id, nec ullo congressu feminarum funerumque, cum incidant eas arbores ut[3] metant, pollui, atque ita religione merces augeri. quidam promiscuum tus iis populis esse tradunt in silvis, alii per vices annorum dividi.

55 XXXI. Nec arboris ipsius quae sit facies constat. res in Arabia gessimus et Romana arma in magnam partem eius penetravere, Gaius etiam Caesar Augusti filius inde gloriam petiit, nec tamen ab ullo, quod equidem sciam, Latino arborum earum tradita est facies.
56 Graecorum exempla variant: alii folio piri, minore

[1] tus *add. Rackham.*
[2] *Rackham*: vident.
[3] *Rackham*: aut.

by the calculation of Eratosthenes a *schoenus* measures 40 furlongs, that is five miles, but some authorities have made the *schoenus* 32 furlongs. There are hills rising to a great height, with natural forests on them running right down to the level ground. It is generally agreed that the soil is clay, and that there are few springs and these charged with alkali. Adjacent to the Astramitae is another district, the Minaei, through whose territory the transit for the export of the frankincense is along one narrow track. It was these people who originated the trade and who chiefly practise it, and from them the perfume takes the name of 'Minaean'; none of the Arabs beside these have ever seen an incense-tree, and not even all of these, and it is said that there are not more than 3000 families who retain the right of trading in it as a hereditary property, and that consequently the members of these families are called sacred, and are not allowed to be polluted by ever meeting women or funeral processions when they are engaged in making incisions in the trees in order to obtain the frankincense, and that in this way the price of the commodity is increased owing to scruples of religion. Some persons report that the frankincense in the forests belongs to all these peoples in common, but others state that it is shared out among them in yearly turns.

The frankincense trade.

XXXI. Nor is there agreement in regard to the appearance of the incense-tree itself. We have carried on operations in Arabia, and the arms of Rome have penetrated into a large part of it; indeed, Gaius Caesar, son of Augustus, won great renown from the country; yet no Latin writer, so far as I know, has described the appearance of this tree. The descriptions given by the Greeks vary: some have stated

The frankincense tree.

dumtaxat et herbidi coloris, prodidere; alii lentisco similem subrutilo folio; quidam terebinthum esse, et hoc visum Antigono regi allato frutice. Iuba rex iis voluminibus quae scripsit ad C. Caesarem Augusti filium ardentem fama Arabiae tradit contorti esse caudicis, ramis aceris maxime Pontici, sucum amygdalae modo emittere, talesque in Carmania apparere et in Aegypto satas studio Ptolomaeorum regnantium.
57 cortice lauri esse constat, quidam et folium simile dixere; talis certe fuit arbor Sardibus, nam et Asiae reges serendi curam habuerunt. qui mea aetate legati ex Arabia venerunt omnia incertiora fecerunt, quod iure miremur, virgis etiam turis ad nos commeantibus, quibus credi potest matrem quoque teretem enodi fruticare trunco.

58 XXXII. Meti semel anno solebat minore occasione vendendi; iam quaestus alteram vindemiam adfert. prior atque naturalis vindemia circa canis ortum flagrantissimo aestu, incidentibus qua maxime videatur esse praegnans tenuissimusque tendi cortex; laxatur

that it has the leaf of a pear-tree, only smaller and of a grass-green colour; others that it resembles the mastich and has a reddish leaf; some that it is a kind of terebinth, and that this was the view of King Antigonus, to whom a plant was brought. King Juba in his volumes dedicated to Gaius Caesar, son of Augustus, whose imagination was fired by the fame of Arabia, states that the tree has a twisted stem and branches closely resembling those of the Pontic maple and that it gives a juice like that of the almond; he says that trees of this description are to be seen in Carmania and in Egypt, where they were introduced under the influence of the Ptolemies when they reigned there. It is well known that it has the bark of a bay-tree, and some have said that the leaf is also like that of the bay; at all events that was the case with the tree when it was grown at Sardis—for the Kings of Asia also interested themselves in planting it. The ambassadors who have come to Rome from Arabia in my time have made all these matters still more uncertain, which may well surprise us, seeing that even some sprigs of the incense-tree find their way to Rome, on the evidence of which we may believe that the parent tree also is smooth and tapering and that it puts out its shoots from a trunk that is free from knots.

Seasons and method for collecting frankincense.

XXXII. It used to be the custom, when there were fewer opportunities of selling frankincense, to gather it only once a year, but at the present day trade introduces a second harvesting. The earlier and natural gathering takes place at about the rising of the Dog-star, when the summer heat is most intense. They make an incision where the bark appears to be fullest of juice and distended to its thinnest; and the bark is

hic plaga, non adimitur. inde prosilit spuma pinguis; haec concreta densatur, ubi loci natura poscat tegete palmea excipiente, aliubi area circumpavita. purius illo modo, sed hoc ponderosius; quod in arbore
59 haesit ferro depectitur, ideo corticosum. silva divisa certis portionibus mutua innocentia tuta est: nemoque [1] saucias arbores custodit, nemo furatur alteri. at, Hercules, Alexandriae, ubi tura interpolantur, nulla satis custodit diligentia officinas! subligaria signantur opifici, persona additur capiti densusve reticulus, nudi emittuntur: tanto minus fidei apud
60 hos [2] poma [3] quam apud illos silvae habent. autumno legitur ab aestivo partu: hoc purissimum, candidum. secunda vindemia est vere, ad eam hieme corticibus incisis; rufum hoc exit, nec conparandum priori. illud carfiathum, hoc dathiathum vocant. creditur et novellae arboris candidius esse, sed veteris odoratius;

[1] nemoque? *Mayhoff*: neque.
[2] *Rackham*: nos.
[3] *Detlefsen*: poena (penates *Mueller*).

loosened with a blow, but not removed. From the incision a greasy foam spurts out, which coagulates and thickens, being received on a mat of palm-leaves where the nature of the ground requires this, but in other places on a space round the tree that has been rammed hard. The frankincense collected in the latter way is in a purer state, but the former method produces a heavier weight; while the residue adhering to the tree is scraped off with an iron tool, and consequently contains fragments of bark. The forest is divided up into definite portions, and owing to the mutual honesty of the owners is free from trespassing, and though nobody keeps guard over the trees after an incision has been made, nobody steals from his neighbour. At Alexandria, on the other hand, where the frankincense is worked up for sale, good heavens! no vigilance is sufficient to guard the factories. A seal is put upon the workmen's aprons, they have to wear a mask or a net with a close mesh on their heads, and before they are allowed to leave the premises they have to take off all their clothes: so much less honesty is displayed with regard to the produce with them than as to the forests with the growers. The frankincense from the summer crop is collected in autumn; this is the purest kind, bright white in colour. The second crop is harvested in the spring, cuts having been made in the bark during the winter in preparation for it; the juice that comes out on this occasion is reddish, and not to be compared with the former taking, the name for which is carfiathum, the other being called dathiathum. Also the juice produced by a sapling is believed to be whiter, but that from an older tree has more scent. Some

quidam et in insulis melius putant gigni,[a] Iuba in insulis negat nasci.

61 Quod ex eo rotunditate guttae pependit masculum vocamus, cum alias non fere mas vocetur ubi non sit femina; religioni tributum ne sexus alter usurparetur. masculum aliqui putant a specie testium dictum. praecipua autem gratia est mammoso, cum haerente lacrima priore consecuta alia miscuit se. singula haec manum inplere solita invenio, cum minore deripiendi aviditate lentius nasci liceret.

62 Graeci stagonian et atomum tali modo appellant, minorem autem orobian; micas concussu elisas mannam vocamus. etiamnum tamen inveniuntur guttae quae tertiam partem minae, hoc est XXVIII denariorum pondus, aequent. Alexandro Magno in pueritia sine parsimonia tura ingerenti aris paedagogus Leonides dixerat ut illo modo cum devicisset turiferas gentes supplicaret; at ille Arabiae potitus ture onustam navem misit ei exhortatus[1] ut large deos adoraret.

63 Tus collectum Sabotam camelis convehitur, porta ad id una patente; degredi via capital reges[2] fecere.

[1] *V.l.* misit et exhortatus est.
[2] *V.l.* leges.

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[a] Under the Attic system ascribed to Solon the *mina* weighed 440 grammes; the *mina* contained 100 *drachmae*, and *drachma* is represented in Latin by *denarius*, but Pliny here makes the *mina* equal to 84 *denarii*.

[b] As a matter of fact all that Alexander did was to have Arabia partly circumnavigated.

people also think that a better kind is produced on islands, but Juba says that no incense grows on islands at all.

Male frankincense.

Frankincense that hangs suspended in a globular drop we call male frankincense, although in other connexions the term 'male' is not usually employed where there is no female; but it is said to have been due to religious scruple that the name of the other sex was not employed in this case. Some people think that male frankincense is so called from its resemblance to the testes. The frankincense most esteemed, however, is the breast-shaped, formed when, while a previous drop is still hanging suspended, another one following unites with it. I find it recorded that one of these lumps used to be a whole handful, in the days when men's eagerness to pluck them was less greedy and they were allowed to form more slowly. The Greek name for frankincense formed in this manner is 'drop-incense' or 'solid incense,' and for the smaller kind 'chick-pea incense'; the fragments knocked off by striking the tree we call manna. Even at the present day, however, drops are found that weigh as much as a third of a *mina*,[a] that is 28 denarii. Alexander the Great in his boyhood was heaping frankincense on the altars in lavish fashion, when his tutor Leonides told him that he might worship the gods in that manner when he had conquered the frankincense-producing races; but when Alexander had won[b] Arabia he sent Leonides a ship with a cargo of frankincense, with a message charging him to worship the gods without any stint.

Transport of frankincense to the Mediterranean.

Frankincense after being collected is conveyed to Sabota on camels, one of the gates of the city being opened for its admission; the kings have made it a

ibi decumas deo quem vocant Sabin mensura, non pondere, sacerdotes capiunt, nec ante mercari licet; inde inpensae publicae tolerantur, nam et benigne certo dierum numero deus hospites pascit. evehi non potest nisi per Gebbanitas, itaque et horum regi
64 penditur vectigal. caput eorum Thomna abest a Gaza nostri litoris in Iudaea oppido |XIIII| LXXXVII D[1] p., quod dividitur in mansiones camelorum LXV. sunt et quae sacerdotibus dantur portiones scribisque
65 regum certae, sed praeter hos et custodes satellitesque et ostiarii et ministri populantur: iam quacumque iter est aliubi pro aqua aliubi pro pabulo aut pro mansionibus variisque portoriis pendunt, ut sumptus in singulas camelos X DCLXXXVIII ad nostrum litus colligat, iterumque imperii nostri publicanis penditur. itaque optimi turis libra X VI pretium habet, secundi X V, tertii X III. probatur[2] candore ac pinguedine,[3] fragilitate, carbone ut statim ardeat, item ne dentem recipiat potiusque in micas frietur. adulteratur apud nos resinae candidae gemma perquam simili, sed deprehenditur quibus dictum est modis.

[1] *Numerus varie traditur.*
[2] probatur . . . frietur *hic Warmington*: *infra post* modis.
[3] ac pinguedine? *Mayhoff*: amplitudine.

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[a] The number is variously given in the MSS.; the reading adopted works out at daily stages of nearly 23 Roman miles—these were a little shorter than ours.

capital offence for camels so laden to turn aside from the high road. At Sabota a tithe estimated by measure and not by weight is taken by the priests for the god they call Sabis, and the incense is not allowed to be put on the market until this has been done; this tithe is drawn on to defray what is a public expenditure, for actually on a fixed number of days the god graciously entertains guests at a banquet. It can only be exported through the country of the Gebbanitae, and accordingly a tax is paid on it to the king of that people as well. Their capital is Thomna, which is 1487½ [a] miles distant from the town of Gaza in Judaea on the Mediterranean coast; the journey is divided into 65 stages with halts for camels. Fixed portions of the frankincense are also given to the priests and the king's secretaries, but beside these the guards and their attendants and the gate-keepers and servants also have their pickings: indeed all along the route they keep on paying, at one place for water, at another for fodder, or the charges for lodging at the halts, and the various octrois; so that expenses mount up to 688 denarii per camel before the Mediterranean coast is reached; and then again payment is made to the customs officers of our empire. Consequently the price of the best frankincense is 6, of the second best 5, and the third best 3 denarii a pound. *Qualities of frankincense.* It is tested by its whiteness and stickiness, its fragility and its readiness to catch fire from a hot coal; and also it should not give to pressure of the teeth, and should rather crumble into grains. Among us it is adulterated with drops of white resin, which closely resemble it, but the fraud can be detected by the means specified. § 36.

66 XXXIII. Murram in iisdem silvis permixta arbore[1] nasci tradidere aliqui, plures separatim; quippe multis locis Arabiae gignitur, ut apparebit in generibus. convehitur et ex insulis[2] laudata, petuntque eam etiam ad Trogodytas Sabaei transitu maris. sativa quoque provenit multum silvestri praelata. gaudet rastris atque ablaqueationibus, melior radice refrigerata.

67 XXXIV. Arbori altitudo ad quinque cubita, nec sine spina, caudice duro et intorto, crassiore quam turis, et ab radice etiam quam reliqua sui parte. corticem levem similemque unedoni, scabrum alii spinosumque dixere, folium olivae verum crispius et aculeatum, Iuba olusatri. aliqui similem iunipero, scabriorem tantum spinisque horridam, folio rotundiore, sed sapore iuniperi. nec non fuere qui e turis arbore utrumque nasci mentirentur.

68 XXXV. Inciduntur bis et ipsae isdemque temporibus, sed a radice usque ad ramorum[3] qui valent. sudant autem sponte prius quam incidantur stacten dictam,[4]

[1] *V.l.* permixta arborem.
[2] *Gelen*: iluis *aut* silvis.
[3] ramorum? *Mayhoff*: ramum *aut* aram.
[4] *V.l.* stacte dicta.

[a] In North-east Africa. See § 28 and note.

XXXIII. Some authorities have stated that myrrh is the product of a tree growing in the same forests among the frankincense-trees, but the majority say that it grows separately; and in fact it occurs in many places in Arabia, as will appear when we deal with its varieties. A kind highly spoken of is also imported from islands, and the Sabaei even cross the sea to the Cave-dwellers' Country[a] to procure it. Also a cultivated variety is produced which is much preferred to the wild kind. The plant enjoys being raked and having the soil round it loosened, as it is the better for having its roots cool. *Myrrh: its source and localities.* §§ 69 f.

XXXIV. The tree grows to a height of nearly eight feet; it has thorns on it, and the trunk is hard and twisted, and thicker than that of the frankincense-tree, and even thicker at the root than in the remaining part of it. Authorities state that the bark is smooth and resembles that of the strawberry-tree, and others that it is rough and prickly; and they say that the leaf is that of the olive, but more wrinkled and with sharp points—though Juba says it is like that of the alexanders. Some say that it resembles the juniper, only that it is rougher and bristling with thorns, and that the leaf is rounder but tastes like juniper. Also there have been writers who have falsely asserted that the frankincense-tree produces myrrh as well as frankincense.

XXXV. The myrrh-producing tree also is tapped twice a year at the same seasons as the frankincense-tree, but in its case the incisions are made all the way up from the root to those of the branches that are strong enough to bear it. But before it is tapped the tree exudes of its own accord a juice called stacte, which is the most highly valued of all myrrh. Next after

cui nulla praefertur. ab hac sativa, et in silvestri quoque melior, aestiva. non dant ex murra portiones deo, quoniam et apud alios nascitur; regi tamen Gebbanitarum quartas partes eius pendunt. cetero passim a vulgo coemptam in folles conferciunt, nostrique unguentarii digerunt haud difficulter
69 odoris atque pinguedinis argumentis. genera complura: Trogodytica silvestrium prima, sequens Minaea, in qua et Astramitica est et Gebbanitica et Ausaritis Gebbanitarum regno, tertia Dianitis, quarta collaticia, quinta Sambracena a civitate regni Sabaeorum mari proxima, sexta quam Dusiritim vocant. est et candida uno tantum loco, quae in Mesalum oppidum confertur. probatur Trogodytica pinguedine et quod aspectu aridior est sordidaque ac barbara sed acrior ceteris. Sambracena praedi-
70 catur [1] ante alias hilaris, sed viribus tenuis. in plenum autem probatio est minutis glaebis nec rotundis in concretu albicantis suci et tabescentis, utque fracta candidos ungues habeat, gustu leniter amara. secunda bonitas intus variae, pessima quae intus nigra, peior si etiam foris.

[1] *Sic vel* praedictis ⟨caret vitiis⟩ *Detlefsen*: praedictis (praedicta *Mayhoff*).

this comes the cultivated kind, and also the better variety of the wild kind, the one tapped in summer. No tithes are given to a god from myrrh, as it also grows in other countries; however, the growers have to pay a quarter of the yield to the king of the Gebbanitae. For the rest it is bought up all over the district from the common people and packed into leather bags; and our perfumiers have no difficulty in distinguishing the different sorts by the evidence of the scent and consistency. There are a great many varieties, the first among the wild kinds being the Cave-dweller myrrh, next the Minaean, which includes the Astramitic, Gebbanitic and Ausaritic from the kingdom of the Gebbanitae; the third quality is the Dianite, the fourth a mixture from various sources, the fifth the Sambracene from a seaboard state in the kingdom of the Sabaei, and the sixth the one called Dusirite. There is also a white kind found in one place only, which is brought into the town of Mesalum for sale. The Cave-dweller kind is distinguished by its thickness and because it is rather dry and dusty and foreign in appearance, but has a stronger scent than the other sorts. The Sambracene variety is advertised as surpassing other kinds in its agreeable quality, but it has not a strong scent. Broadly speaking, however, the proof of goodness is given by its being in small pieces of irregular shape, forming in the solidifying of the juice as it turns white and dries up, and in its showing white marks like finger-nails when it is broken, and having a slightly bitter taste. The second best kind is mottled inside, and the worst is the one that is black inside; and if it is black outside as well it is of a still inferior quality.

Varieties of myrrh.

Pretia ex occasione ementium varia, stactae a X iii ad X l, sativae summum X xi, Erythraeae xvi—hanc volunt Arabicam intellegi—Trogodyticae nucleo xvi s, ei vero quam odorariam vocant, xii.[1]
71 adulteratur lentisci glaebis et cummi, item cucumeris suco amaritudinis causa, sicut ponderis spuma argenti. reliqua vitia deprehenduntur sapore, cummis dente lentescens. fallacissime autem adulteratur Indica murra, quae ibi de quadam spina colligitur; hoc solum peius India adfert, facili distinctione, tanto deterior est.

72 XXXVI. Ergo transit in mastichen quae et ex alia spina fit in India itemque in Arabia; lainam vocant. sed mastiche quoque gemina est, quoniam et in Asia Graeciaque reperitur herba a radice folia emittens et carduum similem malo, seminis plenum ac lacrimae quae erumpit incisa parte summa, vix ut dinosci possit a mastiche vera. nec non et tertia in Ponto est, bitumini similior, laudatissima autem Chia candida, cuius pretium in libras X x, nigrae vero X ii. Chia e lentisco traditur gigni cummium modo. adulteratur ut tura resina.

[1] *Numeri hi omnes varie traduntur.*

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[a] This presumably means that the Indian variety is hardly distinguishable from mastich, but it has been taken to mean that it actually degenerates into mastich.

The prices vary with the supply of buyers; that of stacte ranges from 3 to 50 denarii a pound, whereas the top price for cultivated myrrh is 11 denarii and for Erythrean 16—this kind is passed off as Arabian—and for the kernel of Cave-dweller 16½, but for the variety called scented myrrh 12. Myrrh is adulterated with lumps of lentisk and with gum, and also with cucumber juice to give it a bitter taste, as it is with litharge of silver to increase its weight. The rest of the impurities can be detected by taste, and gum by its sticking to the teeth. But the adulteration most difficult to detect is that practised in the case of Indian myrrh, which is collected in India from a certain thorn-bush; this is the only commodity imported from India that is of worse quality than that of other countries—indeed it is easily distinguished because it is so very inferior. *Prices of myrrh.*

XXXVI. Consequently Indian myrrh passes over into [a] mastich, which is also obtained from a thorn in India, and in Arabia as well; it is called laina. Of mastich also there are two kinds, since in Asia and Greece there is also found a plant sending out from its root leaves and a prickly head like an apple, full of seed and of juice which spurts out when an incision is made in the top, so that it can scarcely be distinguished from true mastich. Moreover, there is also a third kind in Pontus which is more like bitumen; but the kind most highly praised is the white mastich of Chios, which fetches a price of 10 denarii a pound, while the black kind costs 2 denarii. It is said that the Chian mastich exudes from the lentisk like a kind of gum. Like frankincense it is adulterated with resin. *Mastich.*

73 XXXVII. Arabia etiam nunc et ladano gloriatur. forte casuque hoc et iniuria odorum fieri plures tradidere, caprasque, maleficum alias frondibus animal, odoratorum vero fruticum adpetentius, tamquam intellegat[1] pretia, carpere germinum caules praedulci liquore turgentes destillantemque ab iis casus mixtura sucum inprobo barbarum villo abstergere; hunc glomerari pulvere, incoqui sole; et ideo in ladano caprarum pilos esse; sed hoc non alibi fieri quam in Nabataeis qui sunt ex Arabia contermini Syriae.
74 recentiores ex auctoribus storbon hoc vocant, traduntque silvas Arabum pastu caprarum infringi, atque ita sucum villis inhaerescere, verum autem ladanum Cypri insulae esse—ut obiter quaeque genera odorum dicantur quamvis non terrarum ordine. similiter hoc et ibi fieri tradunt et esse oesypum hircorum barbis genibusque villosis inhaerens, sed hederae flore deroso pastibus matutinis, cum est rorulenta Cypros; dein nebula sole discussa pulverem madentibus villis adhaerescere atque ita ladanum depecti.

75 Sunt qui herbam in Cypro ex qua id fiat ledam appellent, etenim illi ledanum vocant; huius[2]

[1] *V.l.* intellegant. [2] huius foliis? *Mayhoff.*

[a] Obtained from the *Cistus creticus.*

XXXVII. Arabia also still boasts of her ladanum.[a] *Gum-ladanum.* A considerable number of writers have stated that this becomes aromatic entirely by accident and owing to an injury; goats, they say, an animal very destructive of foliage in general, but especially fond of scented shrubs, as if understanding the prices they fetch, crop the stalks of the shoots, which swell with an extremely sweet fluid, and wipe off with the nasty shaggy hair of their beards the juice dropping from the stalks in a random mixture, and this forms lumps in the dust and is baked by the sun; and that is the reason why goats' hairs are found in ladanum; though they say that this does not take place anywhere else but in the territory of the Nabataei, a people from Arabia who border on Syria. The more recent of the authorities call this substance 'storbon,' and say that the trees in the Arabs' forests are broken by the goats when browsing, and so the juice sticks to their hairs; but that the true ladanum belongs to the island of Cyprus—to mention the various kinds of scents incidentally even though not in the order of their localities of provenance. It is reported that the same thing takes place there too, and that there is a substance called oesypum which sticks to the beards and shaggy knees of the goats, but that it is produced by their nibbling down the flower of the ivy while they are browsing in the morning, when Cyprus is wet with dew; and that subsequently when the sun has driven away the mist the dust clings to their damp fleeces and thus ladanum can be combed out of them.

Some people call the plant in Cyprus from which *Local varieties of ladanum.* ladanum is produced 'leda,' as in fact these call the scent 'ledanum'; they say that its fat juices

pinguia exsudare,[1] itaque attractis funiculis herbam eam convolvi atque ita offas fieri. ergo in utraque gente bina genera, terrenum et facticium; id quod terrenum est friabile, facticium lentum.

76 Nec non fruticem esse dicunt in Carmania et super Aegyptum per Ptolemaeos tralatis plantis aut, ut alii, degenerante in id turis arbore, colligique ut cummim inciso cortice et caprinis pellibus excipi. pretia sunt laudatissimo in libras asses xxxx. adulteratur myrti bacis et aliis animalium sordibus. sinceri odor esse debet ferus et quodammodo solitudinem redolens, ipsum visu aridum tactu statim mollescere, accensum fulgere odore iucundo; gravi myrtatum [2] deprehenditur crepitatque [3] in igni. praeterea sincero calculi potius e rupibus inhaerent quam pulvis.

77 XXXVIII. In Arabia et olea dotatur lacrima qua medicamentum conficitur Graecis enhaemon dictum singulari effectu contrahendis volnerum cicatricibus. in maritimis hae fluctibus aestuque operiuntur nec bacae nocetur, cum constet in foliis salem relinqui.

78 Haec sunt peculiaria Arabiae, et pauca praeterea

[1] *Detlefsen*: insidere.
[2] *Ian*: gravi tum myrta.
[3] *V.l.* deprehenduntur crepitantque: *an* deprehenditur crepitatuque? *Rackham.*

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[a] *I.e.* 'styptic.'

sweat out, and consequently the plant is rolled up in bundles by tying strings round it, and so made into cakes. Therefore there are two varieties in each kind, the natural sort mingled with earth and the artificial; the earthy sort is friable, whereas the artificial sort is tough.

It is also stated that there is a ladanum shrub in Carmania and beyond Egypt, where plants of it were introduced through the agency of the Ptolemies, or, as others say, it is a throw-back from the incense-tree; and that it is collected like gum by making a cut in the bark and received in goat-skin sacks. The most highly approved kind is sold at a price of 40 *asses* a pound. It is adulterated with myrtle berries and with filth from the fleeces of other animals beside the goat. When genuine it ought to have a fierce scent, somehow suggesting the smell of the desert, and though looking dried up it should soften immediately to the touch, and when set light to flare up with an agreeable scent; but when adulterated with myrtle-berries it can be detected by its unpleasant smell, and it crackles in the fire. Moreover, the genuine ladanum has dust or rather bits of stone from the rocks clinging to it.

XXXVIII. In Arabia there is also an olive endowed with a sort of tear out of which a medicine is made, called in Greek enhaemon,[a] because of its remarkable effect in closing the scars of wounds. These trees grow on the coast and are covered by the waves at high tide without this doing any harm to the berry, although accounts agree that salt is left on the leaves. *Olive-tree styptic.*

These trees are peculiar to Arabia, and it also has a few in common with other countries, which we must

communia alibi dicenda, quoniam in iis vincitur. peregrinos ipsa mire odores et ad exteros petit: tanta mortalibus suarum rerum satias est alienarumque aviditas. XXXIX. Petunt igitur in Elymaeos arborem bratum cupresso fusae similem, exalbidis ramis, iucundi odoris accensam et cum miraculo historiis Claudi Caesaris praedicatam: folia eius inspergere potionibus Parthos tradit, odorem esse proximum cedro, fumumque eius contra ligna alia remedio. nascitur ultra Pasitigrim finibus oppidi Sostratae [1] in monte Scanchro.

79 XL. Petunt et in Carmanos arborem stobrum ad suffitus, perfusam vino palmeo accendentes. huius odor redit a camaris ad solum, iucundus sed adgravans capita, citra dolorem tamen: hoc somnum aegris
80 quaerunt. his commerciis Carras oppidum aperuere, quod est ibi nundinarium. inde Gabbam omnes petere solebant dierum viginti itinere et Palaestinen Syriam; postea Characem peti coeptum ac regna Parthorum ex ea causa auctor est Iuba. mihi ad Persas etiam prius ista portasse quam in Syriam aut Aegyptum videntur Herodoto teste, qui tradit singula milia talentum annua turis pensitasse Arabas

[1] *Mayhoff coll.* VI 136: Sostrae.

[a] In Western Iran. [b] III. 97.

mention elsewhere because in their case it does not hold the first place. Also in Arabia there is a surprising demand for foreign scents, which are imported from abroad: so tired do mortals get of things that are their own, and so covetous are they of what belongs to other people. XXXIX. Consequently they send to the Elymaei [a] for the wood of the bratus, a tree resembling a spreading cypress, with very white branches, and giving an agreeable scent when burnt. It is praised in the Histories of Claudius Caesar as having a marvellous property: he states that the Parthians sprinkle its leaves into their drinks, and that it has a scent very like cedar, and its smoke is an antidote against the effects of other woods. It grows beyond the River Karun on Mount Scanchrus in the territory of the city of Sostrata.

XL. They also import from Carmania the stobrus tree, to use for the purpose of fumigation; it is soaked in palm wine and then set alight. The vapour is thrown back from the ceiling to the floor; it has an agreeable scent, but it causes headache, which is not however severe enough to be painful: it is used as a soporific for invalids. For these trades they have opened up the city of Carrhae, which is the market town of these parts. From Carrhae everybody used formerly to go on to Gabba, a journey of twenty days, and to Palestine in Syria; but afterwards, according to Juba, they began to make for Charax and the Parthian kingdom for the sake of the perfume trade. But my own view is that they used to convey those commodities to the Persians even before they took them to Syria or Egypt, this being attested by Herodotus,[b] who records that the Arabs used regularly to pay a yearly tribute of a thousand talents of incense *Scent-trees.*

81 regibus Persarum. ex Syria revehunt styracem, acri odore eius in focis abigentes suorum fastidium. cetero non alia sunt ligni genera in usu quam odorata, cibosque Sabaei cocunt turis ligno, alii murrae, oppidorum vicorumque non alio quam ex aris fumo atque nidore. ad hunc ergo sanandum styracem in follibus petunt[1] hircinis suffiuntque tecta: adeo nulla est voluptas quae non adsiduitate fastidium pariat. eundem et ad serpentis fugandas urunt in odoriferis silvis frequentissimas.

82 XLI. Non sunt eorum cinnamomum aut casia, et tamen felix appellatur Arabia, falsi et ingrati[2] cognominis, quae hoc acceptum superis ferat cum plus ex eo inferis debeat. beatam illam fecit hominum etiam in morte luxuria quae dis intellexerant
83 genita inurentium defunctis. periti rerum adseverant non ferre tantum annuo fetu quantum Nero princeps novissimo Poppaeae suae die concremaverit. aestimentur postea toto orbe singulis annis tot funera, acervatimque congesta honori cadaverum quae dis per singulas micas dantur! nec minus propitii erant mola

[1] *V.l.* styracem urunt in follibus.
[2] *V.l.* falsa et ingrata.

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[a] The sap of *Storax officinalis.*
[b] Because Arabian perfumes were specially valued for burning on funeral pyres—the original purpose of the custom being to overpower the offensive smell.

to the kings of the Persians. From Syria they bring back styrax,[a] which they burn on their hearths, for its powerful scent to dispel their dislike for their own scents. For the rest, no other kinds of wood are in use among them except those that are scented; and the Sabaei even cook their food with incense-wood, and other tribes with that of the myrrh-tree, so that the smoke and vapour of their towns and districts is just like that which rises from altars. In order therefore to remedy this smell they obtain styrax in goat-skins and fumigate their houses with it: so true it is that there is no pleasure the continued enjoyment of which does not engender disgust. They also burn styrax to drive away the snakes which abound in the forests of perfume-producing trees.

Arabia Felix—claim to title examined.

XLI. These people have not got cinnamon or casia, and nevertheless Arabia is styled 'Happy'—a country with a false and ungrateful appellation, as she puts her happiness to the credit of the powers above, although she owes more of it to the power below.[b] Her good fortune has been caused by the luxury of mankind even in the hour of death, when they burn over the departed the products which they had originally understood to have been created for the gods. Good authorities declare that Arabia does not produce so large a quantity of perfume in a year's output as was burned by the Emperor Nero in a day at the obsequies of his consort Poppaea. Then reckon up the vast number of funerals celebrated yearly throughout the entire world, and the perfumes such as are given to the gods a grain at a time, that are piled up in heaps to the honour of dead bodies! Yet the gods used not to regard with less favour the worshippers who petitioned them with salted spelt,

salsa supplicantibus, immo vero, ut palam est,
84 placatiores. verum Arabiae etiamnum felicius mare est; ex illo namque margaritas mittit. minimaque computatione miliens centena milia sestertium annis omnibus India et Seres et paeninsula illa imperio nostro adimunt—tanti nobis deliciae et feminae constant; quota enim portio ex illis ad deos quaeso iam vel ad inferos pertinet?

85 XLII. Cinnamomum et casias fabulose narravit antiquitas princepsque Herodotus avium nidis et privatim phoenicis, in quo situ Liber pater educatus esset, ex inviis rupibus arboribusque decuti carnis quam ipsae inferrent pondere aut plumbatis sagittis; item casiam circa paludes propugnante unguibus diro vespertilionum genere aligerisque serpentibus, his
86 commentis augentes rerum pretia. comitata vero fabula est ad meridiani solis repercussus inenarrabilem quendam universitatis halitum e tota paeninsula existere tot generum aurae spirante concentu, Magnique Alexandri classibus Arabiam primum odoribus nuntiatam in altum—omnia falsa, siquidem cinnamomum idemque cinnamum nascitur in Ae-
87 thiopia Trogodytis conubio permixta. hi mercantes

[a] *Casia* was the wood, bark and root, and *cinnamomum* the tender shoots, etc. and flower-heads, of various kinds of cinnamon of China, Tibet, Burma, Ceylon and India, but the Romans attributed the plants to N.E. Africa and Arabia because of the trade-route by which they came.

[b] Sent from Egypt and Mesopotamia round Arabia.

but rather, as the facts show, they were more benevolent in those days. But the title 'happy' belongs still more to the Arabian Sea, for from it come the pearls which that country sends us. And by the lowest reckoning India, China and the Arabian peninsula take from our empire 100 million sesterces every year—that is the sum which our luxuries and our women cost us; for what fraction of these imports, I ask you, now goes to the gods or to the powers of the lower world?

XLII. In regard to cinnamomum and casia[a] a fabulous story has been related by antiquity, and first of all by Herodotus, that they are obtained from birds' nests, and particularly from that of the phoenix, in the region where Father Liber was brought up, and that they are knocked down from inaccessible rocks and trees by the weight of the flesh brought there by the birds themselves, or by means of arrows loaded with lead; and similarly there is a tale of casia growing round marshes under the protection of a terrible kind of bats that guard it with their claws, and of winged serpents—these tales having been invented by the natives to raise the price of their commodities. However, there goes with them a story that under the reflected rays of the sun at midday an indescribable sort of collective odour is given off from the whole of the peninsula, which is due to the harmoniously blended exhalation of so many kinds of vapour, and that the first news of Arabia received by the fleets[b] of Alexander the Great was carried by these odours far out to sea—all these stories being false, inasmuch as cinnamomum, which is the same thing as cinnamon, grows in Ethiopia, which is linked by intermarriage with the Cave-

Cinnamon and casia.

III. 111.

id a conterminis vehunt per maria vasta ratibus quas neque gubernacula regant neque remi impellant[1] vel trahant[2] vela,[3] non ratio ulla adiuvet: omnium instar ibi sunt homo tantum et audacia. praeterea hibernum mare eligunt[4] circa brumam, euris tum
88 maxime flantibus. hi recto cursu per sinus inpellunt atque a promunturii ambitu argestae deferunt in portum Gebbanitarum qui vocatur Ocilia. quamobrem illi maxime id petunt, produntque vix quinto anno reverti negotiatores et multos interire. contra revehunt vitrea et aëna, vestes, fibulas cum armillis ac monilibus; ergo negotiatio illa feminarum maxime fide constat.

89 Ipse frutex duum cubitorum altitudine amplissimus, palmique minimus, quattuor digitorum crassitudinis, statim a terra VI digitis surculosus, arido similis, cum viret non odoratus, folio origani, siccitate gaudens, sterilior imbre, caeduae naturae. gignitur in planis quidem, sed densissimis in vepribus rubisque, difficilis collectu. metitur ' non nisi permiserit deus ': Iovem hunc intellegunt aliqui, Assabinum illi vocant. XLIV boum caprarumque et arietum extis impetra-

[1] *Rackham*: trahant.
[2] *Rackham*: impellant.
[3] vela *Mayhoff*: non vela.
[4] *Dalec.*: exigunt.

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[a] Near the modern Cella.

dwellers. The latter buy it from their neighbours and convey it over the wide seas in ships that are neither steered by rudders nor propelled by oars or drawn by sails, nor assisted by any device of art: in those regions only man and man's boldness stands in place of all these things. Moreover they choose the winter sea about the time of the shortest day, as an east wind is then chiefly blowing. This carries them on a straight course through the bays, and after rounding a cape a west-north-west wind brings them to the harbour of the Gebbanitae called Ocilia.[a] On this account that is the port most resorted to by these people, and they say that it is almost five years before the traders return home and that many perish on the voyage. In return for their wares they bring back articles of glass and copper, clothing, and buckles, bracelets and necklaces; consequently that traffic depends principally on having the confidence of the women.

The cinnamon shrub. The actual shrub of the cinnamon is only about three feet high at the most, the smallest being only a span high, and four inches thick, and it throws out shoots as low as six inches from the ground; it has a dried up appearance, and while it is green has no scent; the leaf is like that of the wild marjoram; it likes a dry soil and is less fertile in wet weather; and it stands constant clipping. Though it grows on level ground, it flourishes among the thickest bushes and brambles, and is difficult to gather. It can only be cut 'with the leave of the god'—which some understand to mean Jove, but the Ethiopian name for him is Assabinus. They sacrifice 44 oxen, goats and rams to obtain leave to cut it, though this does not include permission to do so before sunrise or after

tur venia caedendi, non tamen ut ante ortum solis
90 aut post occasum liceat. sarmenta hasta dividit sacerdos deoque partem ponit, reliquum mercator in massas condit. est et alia fama cum sole dividi ternasque partes fieri, dein sorte gemina discerni, quodque soli cesserit relinqui ac sponte conflagrare.

91 Praecipua bonitas virgultorum tenuissimis partibus ad longitudinem palmi, secunda proximis breviore mensura, atque ita ordine; vilissimum quod radicibus proximum, quoniam ibi minimum corticis, in quo summa gratia, eaque de causa praeferuntur cacumina, ubi plurimus cortex.[1] ipsum vero lignum in fastidio propter origani acrimoniam, xylocinnamo-
92 mum vocatur. pretium ei in libras X x. quidam cinnami duo genera tradidere, candidius nigriusque; et quondam praeferebatur candidum, nunc contra nigrum laudatur, atque etiam varium praeferunt candido. certissima tamen aestimatio ne sit scabrum atque ut inter sese tritum tarde frietur. damnatur in primis molle aut cui labet[2] cortex.

93 Ius eius a Gebbanitarum rege solo proficiscitur; is edicto mercatu vendit. pretia quondam fuere in libras denarium milia; auctum id parte dimidia est incensis, ut ferunt, silvis ira barbarorum: id acciderit

[1] *Edd.*: ubi pluribus torpet.
[2] *Mayhoff*: labit *aut* labitur *aut* livet.

sunset. A priest divides the twigs with a spear, and sets aside a portion for the god, while the rest is packed up in clumps by the dealer. Another account is also given, that a share is assigned to the sun, and that the wood is divided into three portions, and then lots are cast twice to assign the shares, and the share that falls to the sun is left, and bursts out in flames of its own accord.

The finest quality with cinnamon belongs to the thinnest parts of the boughs, for about a span's length; the second best to the next pieces for a shorter length, and so on in order; the worst in quality is the part nearest to the roots, because it has the least amount of bark, which is the part most favoured, and consequently preference is given to the tops of the plants, where there is most bark. The actual wood, however, is held in no esteem, because it has the bitter taste of wild marjoram: it is called wood-cinnamon; it fetches 10 denarii a pound. Some writers mention two kinds of cinnamon, one lighter and the other darker in colour; and in former days the light kind was preferred, but now on the other hand the dark is praised, and even a mottled kind is preferred to the pure white. Still, the most certain test of value is that it must not be rough, and that when rubbed together it must crumble slowly. The lowest value is attached to it when it is soft or when the bark is falling of.

Prices and sale.

The right of controlling the sale of cinnamon is vested solely in the king of the Gebbanitae, who opens the market by public proclamation. The prices formerly were 1000 denarii a pound, but this was raised to half as much again after the forests had been burnt, so it is said, by infuriated barbarians;

ob iniquitatem praepotentium an forte, non satis constat: austros ibi tam ardentis flare ut aestatibus
94 silvas accendant invenimus apud auctores. coronas ex cinnamo interrasili auro inclusas primus omnium in templis Capitolii atque Pacis dicavit imperator Vespasianus Augustus. radicem eius magni ponderis vidimus in Palatii templo quod fecerat divo Augusto coniux Augusta, aureae paterae inpositam, ex qua guttae editae annis omnibus in grana durabantur, donec id delubrum incendio consumptum est.

95 XLIII. Frutex et casia est, iuxtaque cinnami campos nascitur sed in montibus, crassiore sarmento, tenui cute verius quam cortice, quem contra atque in cinnamo diximus labare[1] et exinaniri pretium est. amplitudo frutici trium cubitorum, colos triplex: cum primum emicat, candidus pedali mensura, dein rufe-
96 scit addito semipede, ultra nigricans. haec pars maxime laudatur ac deinde proxima, damnatur vero candida. consecant surculos longitudine binum digitorum, mox praesuunt recentibus coriis quadripedum ob id interemptarum, ut putrescentibus vermiculi lignum erodant et excavent corticem tutum
97 amaritudine. probatur recens maxime, et quae sit

[1] livere *Detlefsen.*

[a] *I.e.* the writer.

but it is not absolutely certain whether this was incendiarism provoked by injustice on the part of those in power or was due to accident, as we find it stated in the authorities that the south winds that blow there are so hot that they set fire to the forests in summer. His Majesty the emperor Vespasian was the first person to dedicate in the Temples of the Capitol and of Peace chaplets of cinnamon surrounded with embossed gold. We [a] once saw in the Temple of the Palatine erected in honour of his late Majesty Augustus by his consort Augusta a very heavy cinnamon-root placed in a golden bowl, out of which drops used to distil every year which hardened into grains; this went on until the shrine in question was destroyed by fire.

XLIII. Casia also is a shrub, and it grows close to the plains of cinnamon, but on the mountains; *The casia shrub.* it has thicker stalks, and a thin skin rather than bark, which, in the opposite way to what we said in § 91. the case of cinnamon, gains value when it falls off and thins away. This shrub grows to a height of $4\frac{1}{2}$ feet and it has three colours: when it first sprouts up, to the length of a foot it is white, then for the next six inches it is reddish, and beyond that point it is black. The black part is most highly esteemed, and next the part nearest to it, but the white part has no value at all. They cut the shoots to the length of two inches, and then sew them up in newly flayed hides of animals slaughtered for the purpose, so that as they rot maggots may gnaw away the wood and hollow out the whole of the bark, which is protected from them by its bitter taste. The bark is valued most highly when fresh, when it has a very pleasant smell

odoris mollissimi gustuque quam minime fervens potiusque lento tepore leniter mordens, colore purpurae, quaeque plurima minimum ponderis faciat, brevi tunicarum fistula atque non fragili. ladam vocant talem barbaro nomine. alia est balsamodes ab odore simili appellata, sed amara ideoque utilior medicis, sicut nigra unguentis. pretia nulli diversiora, optumae in libras X L, ceteris X V.

98 His adiecere mangones quam Daphnidis vocant, cognominatam isocinnamon, pretiumque ei faciunt X CCC. adulteratur styrace et propter similitudinem corticum laurus tenuissimis surculis. quin et in nostro orbe seritur, extremoque in margine imperii, qua Rhenus adluit, vidi in alveariis apium satam; color abest ille torridus sole, et ob id simul idem odor.

XLIV. Ex confinio casiae cinnamique et cancamum ac tarum invehitur, sed per Nabataeos Trogodytas, qui consedere ex Nabataeis.

99 XLV. Eo comportatur et serichatum et gabalium, quae intra se consumunt Arabes nostro orbi tantum nominibus cognita, sed cum cinnamo casiaque nascentia. pervenit tamen aliquando serichatum et

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[a] Obtained from *Vateria Indica* of India.
[b] These drugs have not been identified.

and is hardly at all hot to the taste, and rather gives a slight nip with its moderate warmth; it must be of a purple colour, and though bulky weigh very little, and the pores of the outer coats should be short and not liable to break. This kind of casia is called by a foreign name, lada. Another kind is near-balsam, so called because it has a scent like that of balsam, but it has a bitter taste and consequently is more useful for medicinal purposes, just as the black kind is more employed for unguents. No substance has a wider range of price—the best qualities sell at 50 denarii a pound and the others at 5.

A trade variety of casia.

To these varieties the dealers have added one which they call Daphnis's casia, with the further designation of near-cinnamon, and they price it at 300 denarii. It is adulterated with styrax, and with very small sprigs of bay because of the similarity of the barks. It is also grown in our part of the world, and I have seen it on the extreme edge of our empire, where the Rhine washes our frontier, planted among beehives; but there it has not the scorched colour produced by the sun, and for the same reason also it has not the same scent as the southern product.

XLIV. From the border of the casia and cinnamon district gum-resin [a] and aloe-wood are also imported, but they come by way of the Nabataean Cave-dwellers, who are a colony from the Nabataei.

Other scented woods.

XLV. The same place is also a centre for the collection of serichatum and gabalium,[b] the supply of which is used up by the Arabs in their own country, so that they are only known by name to our part of the world, although growing in the same country as cinnamon and casia. However, serichatum does occasionally get through to us, and is employed by some persons

in unguenta additur ab aliquibus. permutatur in libras X VI.

100 XLVI. Myrobalanum Trogodytis et Thebaidi et Arabiae qua[1] Iudaeam ab Aegypto disterminat commune est, nascens unguento, ut ipso nomine apparet, quo item indicatur et glandem esse; arbor est[2] heliotropio, quam dicemus inter herbas, simili folio,
101 fructus magnitudine abellanae nucis. ex his in Arabia nascens Syriaca appellatur, et est candida, contra in Thebaide nigra; praefertur illa bonitate olei quod exprimitur, sed copia Thebaica. inter haec Trogodytica vilissima est. sunt qui Aethiopicam his praeferant glande nigra ac pingui[3] nucleoque gracili, sed liquore qui exprimitur odoratiore, nascentem in
102 campestribus. Aegyptiam pinguiorem esse et crassiore cortice rubentem et, quamvis in palustribus nascatur, breviorem siccioremque, e diverso Arabicam viridem ac tenuiorem et, quoniam amet[4] montuosa, spissiorem; longe autem optimam Petraeam ex quo diximus oppido, nigro cortice, nucleo candido. unguentarii autem tantum cortices premunt, medici et[5] nucleos, tundentes adfusa paulatim calida aqua.

103 XLVII. Myrobalano in unguentis similem proximumque usum habet palma in Aegypto quae vocatur

[1] qua? *Mayhoff*: que *aut* quae.
[2] *Mayhoff*: arbore.
[3] *Dalec.*: glandem nigram nec pingue.
[4] amet? *Mayhoff*: sit.
[5] et *add. Mayhoff.*

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[a] Μυροβάλανον, 'perfume-nut,' the behen-nut.
[b] Or possibly 'ripens more slowly.'
[c] 'Cure for thirst.'

as an ingredient in unguents. It fetches up to 6 denarii a pound.

XLVI. The Cave-dweller country and the Thebaid and Arabia where it separates Judaea from Egypt all alike have the myrobalanum,[a] which is grown for scent, as is shown by its name itself, which also indicates in addition that it is a nut; it is a tree with a leaf that resembles that of the heliotrope, which we shall describe among the herbaceous plants, and a fruit the size of a hazel-nut. The variety growing in Arabia is called the Syrian nut, and is white in colour, whereas the Thebaid kind is black; the former is preferred for the excellent quality of the oil extracted from it, but the Thebaic for its large yield. The Cave-dweller kind is the worst among the varieties. Some persons prefer to these the Ethiopian behen, which has a black oily nut and a slender kernel, but the liquid squeezed out of it has a stronger scent; it grows in level districts. It is said that the Egyptian nut is even more oleaginous and has a thicker shell of a reddish colour, and that though it grows on marshy ground the plant is shorter and drier, whereas the Arabian variety, on the contrary, is green in colour and also smaller in size and more compact in shape[b] because it likes mountain regions; but the Petraean kind, coming from the town mentioned above, is a long way the best—it has a black rind and a white kernel. Perfumiers, however, only extract the juice from the shells, but medical men also crush the kernels, gradually pouring warm water on them while pounding them.

Behen-nut.

XX. 57.

VI. 144.

XLVII. The palm-tree growing in Egypt called the adipsos[c] is used in a similar way to the behen-nut in perfumery, and is almost as much in request; it is

Scented palm.

adipsos, viridis, odore mali cotonei, nullo intus ligno. colligitur autumno [1] paulo ante quam incipiat maturescere. quod si relinquatur, phoenicobalanus vocatur et nigrescit vescentisque inebriat. myrobalano pretium in libras X II. institores et faecem unguenti hoc nomine appellant.

104 XLVIII. Calamus quoque odoratus in Arabia nascens communis Indis atque Syriae est, in qua vincit omnis. a nostro mari CL stadiis inter Libanum montem aliumque ignobilem—non, ut quidam existimavere, Antilibanum—in convalle modica iuxta lacum cuius palustria aestate siccantur, tricenis ab eo stadiis calamus et iuncus odorati gignuntur. sane enim dicamus et de iunco, quamvis alio herbis dicato volumine, quoniam tantum [2] hic unguentorum ma-
105 teria tractatur. nihil ergo a ceteris sui generis differunt aspectu, sed calamus praestanti odore statim e longinquo invitat, mollior tactu, meliorque qui minus fragilis et qui assulose potius quam qui raphani modo
106 frangitur. inest fistulae araneum quod vocant florem; praestantior est cui numerosius. reliqua probatio ut niger sit—damnantur albi—melior quo brevior crassiorque et lentus in frangendo. calamo pretium in libras singulas X I, iunco X V. tra-

[1] *Mayhoff*: aut enim.
[2] *Pintianus*: tamen.

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[a] This and the scented rush below belong to the genus *Andropogon*. For another view cf. Vol. VII, Index of Plants s.v. *Calamus*.

[b] Jebel es Sheikh.

green in colour, with the scent of a quince, and has no kernel inside it. It is gathered in autumn, a little before it begins to ripen. If left on the tree longer, it is called the palm-nut, and it turns black and has the property of making people who eat it intoxicated. The behen-nut is priced at two denarii a pound. The retailers also give the name of behen to the dregs of the unguent made from it.

XLVIII. The scented reed[a] which also grows in Arabia is shared with the Indies and Syria, the one growing in the latter country being superior to all the other kinds. About 17 miles from the Mediterranean, between Mount Lebanon and another range of no importance—not Counter-Lebanon[b] as some have supposed—there is a moderately wide valley near a lake the shallow parts of which dry up in summer, where 3½ miles from the lake the scented reed and scented rush grow. For clearly we may speak about the rush also, although I have devoted another volume to herbaceous plants, as here we are only dealing with plants that supply material for unguents. These plants then do not differ at all in appearance from the rest of their class, but the reed has a specially fine scent which attracts people even from a long way off, and is softer to the touch; the better variety is the one that is less brittle and that breaks in splinters rather than like a radish. Inside the tube there is a sort of cobweb which is called the flower; the plant containing most of this is the best. The remaining tests of its goodness are that it should be black—white varieties are thought inferior—and that it is better the shorter and thicker it is and if it is pliant in breaking. The price of the reed is one denarius and that of the rush 5

Scented reed.

XXI. 120.

duntque iuncum odoratum et in Campania inveniri.

107 Discessimus a terris oceanum spectantibus ad convexas in nostra maria. XLIX. Ergo Aethiopiae subiecta Africa hammoniaci lacrimas [1] stillat in harenis suis; inde nomen [2] etiam Hammonis oraculo, iuxta quod gignitur arbore quam metopon appellant, resinae modo aut cummium. genera eius duo: thrauston masculi turis similitudine,[3] quod maxime probatur, alterum pingue et resinosum, quod phyrama appellant. adulteratur harenis velut nascendo adprehensis; igitur quam minimis glaebis probatur et quam purissimis. pretium optimo in libras asses xxxx.

108 L. Sphagnos infra eos situs in Cyrenaica provincia maxime probatur: alii bryon vocant. secundum locum optinet Cyprius, tertium Phoenicius. fertur et in Aegypto nasci, quin et in Gallia, nec dubitaverim: sunt enim hoc nomine cani arborum villi, quales in quercu maxime videmus, sed odore praestantes. laus prima candidissimis atque latissimis, secunda rutilis, nulla nigris; et in insulis petrisque nati improbantur, omnesque quibus palmarum atque non suus odor sit.

[1] lacrimas? *Mueller*: lacrima.
[2] *Mueller*: nomine.
[3] *V.l.* similitudinem: thrauston ⟨ob⟩ masculi turis similitudinem? *Rackham.*

denarii a pound. It is reported that scented rush is also found in Campania.

African scented gum.

We have now left the countries looking on the ocean to come to those that converge towards our seas. XLIX. Well, Africa, which lies below Ethiopia, in its sandy deserts distils tear-like drops of a substance called hammoniacum; this is also the origin of the name of the Oracle of Hammon, near to which this substance is produced from a tree called metopon, after the manner of resin or gum. There are two kinds of hammoniacum: one called thrauston (friable), which is like male frankincense and is the kind most approved, and the other, greasy and resinous, which they call phyrama (paste). It is adulterated with sand, which looks as if it has stuck to it while growing; consequently it is preferred in extremely small lumps and these as pure as possible. The price of the best hammoniacum is 40 *asses* a pound.

Scented mosses.

L. The sphagnos valued most highly is found in the province of Cyrenaica, south of these regions: others call it bryon. The second place is held by the Cyprian kind, and the third by the Phoenician. It is also said to grow in Egypt, and indeed in Gaul as well, and I am not prepared to doubt this; for there are grey tufts that bear this name growing on trees, resembling the growths that we principally see on the oak, but having a superior scent. The most highly esteemed are the whitest and most widely spreading mosses, and the bright red ones are in the second class, but no value at all is attached to the black variety; moreover, the mosses that grow on islands and on rocks are not esteemed, nor are all those that have the scent of palm-trees and not that of their own kind.

109 LI. Cypros in Aegypto est arbor ziziphi foliis, semine coriandri candido, odorato. coquitur hoc in oleo premiturque postea, quod cypros vocatur; pretium ei in libras X v. optimum e Canopica in ripis Nili nata, secundum Ascalone Iudaeae, tertium in[1] Cypro insula: odoris suavitas quaedam. hanc esse dicunt arborem quae in Italia ligustrum vocetur.

110 LII. In eodem tractu aspalathos nascitur, spina candida magnitudine arboris modicae, flore rosae; radix unguentis expetitur. tradunt in quocumque frutice curvetur arcus caelestis eandem quae sit aspalathi suavitatem odoris exisistere, sed si in aspalatho, inenarrabilem quandam. quidam eum erysisceptrum vocant, alii sceptrum. probatio eius in colore rufo vel igneo tactuque spisso et odore

111 castorei. permutatur in libras X v. LIII. In Aegypto nascitur et maron peius quam Lydium, maioribus foliis ac variis: illa brevia ac minuta et odorata.

LIV. Sed omnibus odoribus praefertur balsamum, uni terrarum Iudaeae concessum, quondam in duobus tantum hortis, utroque regio, altero iugerum viginti non amplius, altero pauciorum. ostendere arborum[2] hanc urbi imperatores Vespasiani, clarumque dictu, a

[1] in *add.*: *Mayhoff.*
[2] *Mueller*: arbutum.

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[a] *Lawsonia inermis.*
[b] *Origanum sipyleum*, a kind of marjoram.
[c] *Commiphora opobalsamum.*

LI. A tree found in Egypt is the cypros,[a] which has the leaves of the jujube-tree and the white, scented seed of the coriander. Cypros-seed is boiled in olive oil and afterwards crushed, producing the cypros of commerce, which sells at 5 denarii a pound. The best is made from the tree grown at Canopus on the banks of the Nile, the second best at Ascalon in Judaea, and the third quality on the island of Cyprus, which has a sort of sweet scent. The cypros is said to be the same as the thorn called privet in Italy.

LII. In the same region grows the aspalathus, a white thorn of the size of a moderate-sized tree, with the flower of a rose; the root is in request for unguents. People say that any shrub over which a rainbow forms its arch gives out a scent as sweet as that of the aspalathus, but that if this happens in the case of an aspalathus a scent rises that is indescribably sweet. Some call this shrub red sceptre and others sceptre. The test of its genuineness lies in its fiery red colour, firmness to the touch and scent like that of beaver-oil. It is sold for 5 denarii a pound. LIII. Cat-thyme[b] also grows in Egypt, though not so good a kind as the Lydian variety, its leaves being larger and variegated: those of the Lydian are short and very small, and have a strong scent.

Scented thorn.

LIV. But every other scent ranks below balsam.[c] The only country to which this plant has been vouchsafed is Judaea, where formerly it grew in only two gardens, both belonging to the king; one of them was of not more than twenty iugera in extent and the other less. This variety of shrub was exhibited to the capital by the emperors Vespasian and Titus;

Balsam of Mecca: when first imported

Pompeio Magno in triumpho arbores quoque duxi-
112 mus. servit nunc haec ac tributa pendit cum sua gente, in totum alia natura quam nostri externique prodiderant; quippe viti similior est quam myrto: malleolis seri didicit nuper, vincta ut vitis, et inplet colles vinearum modo. quae sine adminiculis se ipsa sustinet tondetur similiter fruticans; ac rastris nitescit properatque nasci, intra tertium annum
113 fructifera. folium proximum[1] tuberi, perpetua coma. saeviere in eam Iudaei sicut in vitam quoque suam; contra defendere Romani et dimicatum pro frutice est; seritque nunc eum fiscus, nec unquam fuit numerosior; proceritas intra bina cubita subsistit.

114 Arbori tria genera: tenui[2] et capillacea coma, quod vocatur eutheriston; alterum scabro aspectu, incurvum, fruticosum, odoratius: hoc trachy appellant; tertium eumeces, quia est reliquis procerius, levi cortice. huic secunda bonitas, novissima euthe-
115 risto. semen eius vino proximum gustu, colore rufum, nec sine pingui; peius in grano quod levius

[1] proximum ⟨rutae, fructus proximus⟩ *Ian coll. Theoph. H. Pl.* 9, 6, *Diosc.* 1, 18.
[2] *V.l.* tenue.

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[a] Perhaps the text requires expanding, to give 'Its leaf is very like that of rue and its fruit is like the tuber-apple.'

and it is a remarkable fact that ever since the time of Pompey the Great even trees have figured among the captives in our triumphal processions. The balsam-tree is now a subject of Rome, and pays tribute together with the race to which it belongs; it differs entirely in character from the accounts that had been given of it by Roman and foreign writers, being more like a vine than a myrtle: it has quite recently been taught to grow from mallet-shoots tied up on trellises like a vine, and it covers whole hillsides as vineyards do. A balsam unsupported by a trellis and carrying its own weight is pruned in a similar manner when it puts out shoots; the use of the rake makes it thrive and sprout rapidly, bearing in its third year. Its leaf is very near that of the tuber-apple,[a] and it is an evergreen. The Jews vented their wrath upon this plant as they also did upon their own lives, but the Romans protected it against them, and there have been pitched battles in defence of a shrub. It is now cultivated by the treasury authorities, and was never before more plentiful; but its height has not advanced beyond three feet.

Varieties of balsam.

There are three varieties of balsam-tree: one with thin foliage like hair, called easy-to-gather; another with a rugged appearance, curving over, of a bushy growth and with a stronger scent—they call this rough balsam, and the third tall balsam because it grows higher than the rest; this has a smooth bark. This last is the second best in quality, and the easy-to-gather kind is the lowest grade. Balsam-seed tastes very like wine, and has a red colour and a rather greasy consistency; that contained in a husk, which is lighter in weight and greener

atque viridius. ramus crassior quam myrto; inciditur vitro, lapide osseisve cultellis—ferro laedi vitalia odit, emoritur protinus, eodem amputari supervacua patiens. incidentis manus libratur artifici
116 temperamento, ne quid ultra corticem violet. sucus e plaga manat quem opobalsamum vocant, suavitatis eximiae, sed tenui gutta; ploratus lanis parva colligitur in cornua, ex iis novo fictili conditur, crassiori similis oleo et in musto candidus[1]; rufescit
117 deinde simulque durescit e tralucido. Alexandro Magno res ibi gerente toto die aestivo unam concham impleri iustum erat, omni vero fecundidate e maiore horto congios senos, e minore singulos, cum et duplo rependebatur argento[2]; nunc etiam singularum arborum largior vena. ter omnibus percutitur
118 aestatibus, postea deputatur. et sarmenta quoque in merce sunt; $\overline{\text{DCCC}}$ HS amputatio ipsa surculusque veniere intra quintum devictae Iudaeae[3] annum. xylobalsamum vocatur et coquitur in unguentis; pro suco ipso substituere officinae. corticis etiam ad medicamenta pretium est; praecipua autem gratia

[1] *Detlefsen*: candida.
[2] *Edd.* argentum.
[3] Iudaeae *add. Mueller.*

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[a] The small *concha* was something over a hundredth part of a pint, the large *concha* three times that amount. The *congius* was a little less than 6 pints.

in colour, is inferior. The branch is thicker than that of a myrtle; incision is made in it with a piece of glass or a stone, or with knives made of bone—it strongly dislikes having its vital parts wounded with steel, and dies off at once, though it can stand having superfluous branches pruned with a steel knife. The hand of the operator making the incision has to be poised under skilful control, to avoid inflicting a wound going below the bark. The juice that oozes out of the incision is called opobalsamum; it is extremely sweet in taste, but exudes in tiny drops, the trickle being collected by means of tufts of wool in small horns and poured out of them into a new earthenware vessel to store; it is like rather thick olive-oil and in the unfermented state is white in colour; later on it turns red and at the same time hardens, having previously been transparent. When Alexander the Great was campaigning in that country, it was considered a fair whole day's work in summer to fill a single shell,[a] and for the entire produce of a rather large garden to be six congii and of a smaller one congius, at a time moreover when its price was twice its weight in silver: whereas at the present day even a single tree produces a larger flow. The incision is made three times in every summer, and afterwards the tree is lopped. There is a market even for the twigs too; within five years of the conquest of Judaea the actual loppings and the shoots fetched 800,000 sesterces. These trimmings are called wood of balsam; they are boiled down in perfumes, and in manufacture they have taken the place of the actual juice of the shrub. Even the bark fetches a price for drugs; but the tears are valued most, the seed coming second,

Mode of tapping tree.

By-products of balsam tree.

lacrimae, secunda semini, tertia cortici, minima ligno.
119 ex hoc buxosum est optimum, quod et odoratissimum, e semine autem maximum et ponderosissimum, mordens gustu fervensque in ore. adulteratur Petraeo hyperico, quod coarguitur magnitudine, inanitate, longitudine, odoris ignavia, sapore piperis.
120 lacrimae probatio, ut sit e pingui tenuis ac modice rufa et in fricando odora.[1] secunda candidi [2] coloris,[3] peior viridis crassusque, pessimus niger, quippe ut oleum senescit. ex omni incisura maxime probatur quod ante semen fluxit. et alias adulteratur seminis suco, vixque maleficium deprehenditur gustu amariore; esse enim debet lenis, non subacidus, odore
121 tantum austerus. vitiatur et oleo rosae, cypri, lentisci, balani, terebinthi, myrti, resina, galbano, cera Cypria, prout quaeque res fuit, nequissime autem cummi, quoniam arescit in manu inversa et in aqua
122 sidit, quae probatio eius gemina est: debet sincerum item arescere,[4] sed hoc cummi addita fragile [5] crusta evenit. et gustu deprehenditur; carbone vero quod cera resinaque adulteratum est, nigriore flamma. nam melle mutatur statim: in manu con-
123 trahit muscas. praeterea sinceri densatur in tepida

[1] *V.l.* odorata.
[2] *V.l.* candidus.
[3] *Mayhoff*: colos.
[4] item arescere? *Mayhoff*: inarescere *aut* marcescere.
[5] *V.l.* fragili.

the bark third and the wood lowest. Of the wood the sort resembling boxwood is the best, and also has the strongest scent; the best seed is that which is largest in size and heaviest in weight, which has a biting taste and is hot in the mouth. Balsam is adulterated with the ground-pine of Petra, which can be detected by its size, hollowness and long shape and by its weak scent and its taste like pepper. The test of tear of balsam is that it should be thinning out in consistency, and slightly reddish, and give a strong scent when rubbed. The second quality is white in colour, the next inferior is green and thick, and the worst kind black, inasmuch as like olive oil it deteriorates with age. Out of all the incisions the oil that has flowed out before the formation of the seed is considered the best. Also another mode of adulteration is by using the juice of the seed, and the fraud can be with difficulty detected by the greater bitterness of the taste; for the proper taste is smooth, without a trace of acidity, the only pungency being in the smell. It is also adulterated with oil of roses, of cyprus, of mastich, of behen-nut, of the turpentine-tree and of myrtle, and with resin, galbanum and wax of Cyprus, just as occasion serves; but the worst adulteration is with gum, since this dries up on the back of the hand and sinks in water, which is a double test of the genuine article—pure tear of balsam ought to dry up likewise, but the sort with gum added to it turns brittle and forms a skin. It can also be detected by the taste; or when adulterated with wax or resin, by means of a hot coal, as it burns with a blacker flame. When mixed with honey, its quality alters immediately, as it attracts flies even when held in the hand. Moreover a drop

Modes of adulteration; tests.

aqua gutta sidens ad ima vasa, adulterata olei modo innatat et, si metopio vitiata est, circulo candido cingitur. summa est probatio ut lac coagulet, in veste maculas non faciat. nec manifestior alibi fraus, quippe milibus denarium sextarii, empti vendente fisco tricenis denariis, veneunt: in[1] tantum expedit augere liquorem.[2] xylobalsamo pretium in libras X VI.

124 LV. Proxima Iudaeae Syria supra Phoenicen styracem gignit circa Gabala et Marathunta et Casium Seleuciae montem. arbor est eodem nomine, cotoneo malo similis; lacrimae ex austero iucundi odoris, intus similitudo harundinis, suco praegnas. in hanc circa canis ortus advolant pinnati vermiculi erodentes;
125 ob id scobe sordescit. styrax laudatur post supra dicta ex Pisidia, Side, Cypro, Cilicia, Creta minime, ex Amano Syriae medicis, sed unguentariis magis. colos in quacumque natione praefertur rufus et pinguiter lentus, deterior furfurosus et cano situ obductus. adulteratur cedri resina vel cummi, alias melle aut amygdalis amaris; omnia ea deprehenduntur gustu. pretium optimo X XVII. exit et in Pamphylia, sed aridior minusque sucosus.

[1] [in]? *Mayhoff.*

[2] expedit licere auctorem *Ian*: exp. augere licitanti (*vel* licitatori) *Warmington.*

of pure balsam thickens in warm water, settling to the bottom of the vessel, whereas when adulterated it floats on the top like oil, and if it has been tampered with by using metopium, a white ring forms round it. The best test of all is that it will cause milk to curdle and will not leave stains on cloth. In no other case is more obvious fraud practised, inasmuch as every pint bought at a sale of confiscated property for 300 denarii when it is sold again makes 1000 denarii: so much does it pay to increase the quantity of adulteration. The price of wood-balsam is six denarii a pound.

LV. The region of Syria beyond Phoenicia nearest to Judaea produces styrax in the part round Gabala and Marathus and Mount Casius in Seleucia. The tree has the same name; it is similar to a quince. Its tears have a pleasant, almost pungent scent, and inside it resembles a reed, and is full of juice. About the rising of the Dog-star certain little maggots with wings flutter about this tree, gnawing away the wood, and consequently it is fouled with their scrapings. The styrax esteemed next to the above-named growths comes from Pisidia, Side, Cyprus and Cilicia, and that from Crete is rated lowest; that from Mount Amanus in Syria is valued by the medical profession, but even more by perfumiers. In every nation a red colour and sticky consistency are preferred, and styrax that is brown and covered with white mould is considered inferior. It is adulterated with cedar [a] resin or gum, and another way employs honey or bitter almonds; all these adulterations can be detected by their taste. The price of the best styrax is 17 denarii. It is also produced in Pamphylia, but this is a drier and less juicy kind.

Styrax (Storax officinalis).

[a] Cf. p. 128 note *b*.

126 LVI. Dat et galbanum Syria in eodem Amano monte e ferula quam eiusdem nominis resinae modo stagonitim appellant. quod maxime laudant cartilaginosum, purum ad similitudinem hammoniaci minimeque lignosum. sic quoque adulteratur faba aut sacopenio. sincerum, si uratur, fugat nidore serpentes. permutatur in libras X v. LVII. Medicinae hoc tantum, panacen et unguentis eadem
127 gignit, nascentem et in Psophide Arcadiae circaque Erymanthi fontem et in Africa et in Macedonia, ferula sui generis quinque cubitorum, foliis primo quaternis, mox senis in terra iacentibus ampla magnitudine rotundis, in cacumine vero oleagineis, semine [1] muscariis dependente ut ferulae. excipitur sucus inciso caule messibus, radice autumno. laudatur candor eius coacti; sequens pallido statera; niger colos inprobatur. pretium optimo in libras X II.
128 LVIII. Ab hac ferula differt quae vocatur spondylion foliis tantum, quia sunt minora et platani divisura. non nisi in opacis gignitur. semen eodem nomine silis speciem habet, medicinae tantum utile. LIX.
129 Dat et malobathrum Syria, arborem folio convoluto, colore aridi foli, ex quo premitur oleum ad unguenta, fertiliore eiusdem Aegypto. laudatius tamen ex

[1] *Mayhoff*: semine in *aut* semine vero.

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[a] From *Ferula galbaniflua*.

[b] See Index of Plants, Vol. VII.

[c] Almost certainly leaf of cinnamon, and not, as was often thought, betel; its attribution to Syria instead of India (*malobathrum* = Sanskrit *tamalapatra*, 'cinnamon-leaf'), Ceylon, China, etc., was owing to trade-routes.

Other scent-plants.

LVI. Syria also supplies galbanum,[a] which also grows on Mount Amanus; it comes from a kind of fennel which they call stagonitis, like the resin of the same name. The kind of galbanum most esteemed is cartilaginous, clear like hammoniacum and free from all woody substance. Even so it is adulterated with beans or with sacopenium.[b] Pure galbanum, if burnt, drives away snakes with its smell. It is sold at 5 denarii a pound. LVII. Pure galbanum is only useful for medicinal purposes; but Syria produces all-heal which is used for unguents as well. It also grows at Psophis in Arcadia and round the spring of Erymanthus, and in Africa and in Macedonia also. It has a peculiar stalk 7½ feet long; this throws out first four leaves and then six lying on the ground, which are very large and of a round shape, but the leaves on the top of the plant are like those of the olive; the seed hangs in tufts like that of the fennel. The juice is got by means of incisions made in the stalk at harvest time and at the root in autumn. It is valued for whiteness when it coagulates, the next grade being assigned to juice of a pale colour, while the black is held of no value. The price of the best quality is two denarii a pound. LVIII. From this fennel the one called bear's-wort fennel differs only in the leaf, which is smaller, and has divisions like a plane-leaf. It only grows in shady places. Its seed, bearing the same name, resembles that of hart-wort; it is only useful for medicine. LIX. Syria also supplies the malobathrum,[c] a tree with a folded leaf, the colour of a leaf that has dried up; from it oil is pressed to use for unguents, Egypt also producing it in still greater quantity. But the

India venit; in paludibus ibi gigni tradunt lentis modo, odoratius croco, nigricans scabrumque, quodam salis gustu. minus probatur candidum; celerrime situm in vetustate sentit. sapor eius nardo similis esse debet sub lingua; odor vero in vino subfervefacti antecedit alios. in pretio quidem prodigio simile est, a denaris singulis ad Ӿ cccc pervenire libras, folium autem ipsum in libras Ӿ lx.

130 LX. Oleum et omphacium est: fit duobus generibus et totidem modis, ex olea et vite, olea adhuc alba expressa, deterius ex druppa—ita vocatur priusquam cibo matura sit, iam tamen colorem mutans—differentia quod hoc viride est, illud can-
131 didum. e vite psithia fit aut Aminaea. cum sunt acini ciceris magnitudine, ante canis ortum, in prima lanugine demetitur uva eiusque melligo; reliquum corpus sole coquitur—nocturni rores caventur in fictili conditae[1];—melligo colligitur, subinde et Cyprio aere servatur. optima quae rufa, acriorque

[1] *V.l.* condita.

kind that comes from India is valued more highly; it is said to grow there in marshes, like the lentil, with a scent stronger than that of saffron, a darkish rough appearance, and a sort of salt taste. The white variety is less highly spoken of; it very quickly acquires a musty smell with age. Malobathrum when placed under the tongue ought to taste like nard; but its scent when it is put in slightly warmed wine surpasses any others. In point of price at all events it approaches the marvellous, the pound ranging from one denarius to four hundred, while the leaf itself reaches 60 denarii a pound.

Oil made of unripe olives and grapes, catkins, wild grapes, elate fir and comacum.

LX. There is also the oil of unripe berries, which is made in two varieties and by two processes, one kind being made from the olive and one from the vine. The olive is pressed while still white, or an inferior oil is obtained from the druppa—which is the name given to an olive not yet ripe enough to eat but already beginning to change colour—the difference being that the inferior kind is green and the other white. It is made either from the psithian vine[a] or from the vine of Aminaea. The vine is plucked when the grapes are the size of a chick-pea, before the rising of the Dog-star, when the first bloom is on them, and the unripe juice is obtained; after which the remaining pulp is left to dry in the sun—precaution being taken against nocturnal dews, by storing the grapes in an earthenware vessel—while the unripe juice is collected and at once also put to keep in a Cyprian bronze jar. The best kind is that which is red in colour and rather

[a] See XIV. 80.

et aridior. pretium omphacio in libras X̶ VI. fit et alio modo, cum in mortariis uva inmatura teritur siccataque in sole postea digeritur in pastillos.

132 LXI. Eodem et bryon pertinet, uva populi albae. optima circa Cnidum aut Cariam in sitientibus aut siccis asperisque, secunda in Lyciae cedro. eodem et oenanthe pertinet; est autem vitis labruscae uva. colligitur cum floret, id est cum optime olet, siccatur in umbra substrato linteo atque ita in
133 cados conditur. praecipua ex Parapotamia, secunda ab Antiochia atque Laodicea Syriae, tertia ex montibus Medicis; haec utilior medicinae. quidam omnibus his praeferunt eam quae in Cypro insula nascitur. nam quae in Africa fit ad medicos tantum pertinet vocaturque massaris. omnis autem ex alba labrusca praestantior quam e nigra.

134 LXII. Est praeterea arbor ad eadem unguenta pertinens quam alii elaten vocant—quod nos abietem—alii palmam, alii spatham. laudatur Hammoniaca maxime, mox Aegyptia, dein Syriaca, dumtaxat in locis sitientibus odora, pingui lacrima, quae in unguenta additur ad domandum oleum.

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[a] The word usually means 'green laver': here it denotes a cluster of catkins.

bitter and dry to the taste. Omphacium sells at 6 denarii a pound. There is also another way of making it, by pounding up unripe grapes in mortars; the grapes are afterwards dried in the sun and divided up into lozenges.

LXI. To the same family also belongs bryon,[a] obtained from the catkins of the white poplar. The best kind grows in the neighbourhood of Cnidus or Caria, in waterless districts or on dry rough ground, and a second best quality grows on the cedar in Lycia. To the same group also belongs oenanthe, obtained from the cluster of the wild vine. It is picked when it flowers, which is the time when it has the best scent, and it is dried in the shade on a linen sheet spread out for the purpose, and then put into casks to store. The best kind comes from Parapotamia, the second best from Antiochia and Laodicea in Syria, and the third best from the mountains in Media; the last kind is more useful for medicines. Some people prefer the kind that grows in the island of Cyprus to all of these. As for the oenanthe produced in Africa it is only used by the doctors, and is called massaris. But all the oenanthe obtained from the white wild vine is superior to that from the black.

LXII. There is also another tree that likewise serves for producing unguents, which is called by some people an elate—the Latin for which is 'fir'—and by others a palm and by others again a spatha. That of Hammonium is most highly spoken of, next the Egyptian variety, and then the Scythian. It only has a scent if it grows in regions devoid of water; it has tears of a greasy consistency, which are added to unguents to overcome the hardness of the oil.

135 LXIII. In Syria gignitur et cinnamum quod comacum appellant; hic est sucus nuci expressus multum a suco illo[1] veri cinnami differens, vicina tamen gratia. pretium in libras asses XXXX.

[1] *Pintianus*: a susculo *aut* a surculo.

LXIII. Syria also produces the kind of cinnamon called comacum;[a] this is a juice squeezed out of a nut, and is quite different from the juice of the true cinnamon, although it is almost equally agreeable. Its price is 40 *asses* a pound.

[a] Possibly nutmeg of the Moluccas, attributed to Syria because of the trade-route.

BOOK XIII

LIBER XIII

I. Hactenus in odoribus habent pretia silvae,
erantque parum[1] per se mira singula, iuvitque
luxuriam[2] omnia ea miscere et e cunctis unum
2 odorem facere: ita reperta sunt unguenta. quis
primus invenerit non traditur. Iliacis temporibus
non erant, nec ture supplicabatur: cedri tantum et
citri suorum fruticum et in sacris fumo convolutum
nidorem verius quam odorem noverant, iam rosae
suco reperto; nominatur enim hic quoque in olei
3 laude. unguentum Persarum gentis esse debet; illi
madent eo et accersita commendatione inluvie natum
virus extingunt. primum, quod equidem inveniam,
castris Darii regis expugnatis in reliquo eius apparatu
Alexander cepit scrinium unguentorum. postea
voluptas eius[3] a nostris quoque inter lautissima[4]
atque etiam honestissima vitae bona admissa est,
honosque et ad defunctos pertinere coepit; qua-
propter plura de eo dicemus. quae ex his non erunt

[1] parum *add.* ? *Mayhoff.*
[2] *Edd.*: luxuria.
[3] ⟨rei⟩ eius ? *Mayhoff.*
[4] *V.l.* laudatissima.

[a] Cf. p. 128, note *b*.

BOOK XIII

I. This is the degree to which the forests are valuable in the matter of scents; and their various products were not sufficiently remarkable by themselves, and luxury took pleasure in mixing them all up together and making a single scent out of the combination: thus perfumes were invented. It is not recorded who first discovered them. In the days of the Trojan War they did not exist, and incense was not used when prayers were made to the gods: even in the rites of religion people only knew the scent of cedar and citrus wood, trees of their own country, or more truly the reek, as it rose in wreaths of smoke, though attar of roses had already been discovered, for it also is specified as an ingredient in commending olive oil. Perfume ought by right to be accredited to the Persian race: they soak themselves in it, and quench the odour produced from dirt by its adventitious attraction. The first case that I am able to discover was when a chest of perfumes was captured by Alexander among the rest of the property of King Darius when his camp was taken. Afterwards the pleasure of perfume was also admitted by our fellow-countrymen as well among the most elegant and also most honourable enjoyments of life, and even began to be an appropriate tribute to the dead; and consequently we will enlarge on the subject. Those among perfumes which are not the product of

Perfumes, when invented.

fruticum ad praesens nominibus tantum indicabuntur,
natura vero eorum suis reddetur locis.
4 II. Unguentis cognomina dedere aliis patriae, aliis
suci, aliis arbores, aliis aliae [1] causae; primumque id
scire convenit, mutata auctoritate et saepius tran-
sisse gloriam: laudatissimum fuit antiquitus in Delo
insula, postea Mendesium. nec mixtura et con-
positione tantum hoc accidit, sed iidem suci varie
alibi atque alibi praevaluere aut degeneravere.
5 irinum Corinthi diu maxime placuit, postea Cyzici,
simili modo rhodinum Phaselide,[2] quam gloriam
abstulere Neapolis, Capua, Praeneste. crocinum [3]
Solis Ciliciae diu maxime laudatum est, mox Rhodi;
oenanthinum in Cypro, post Adramytteo, amaracinum
in Coo, postea eodem loco praelatum est melinum,
cyprinum in Cypro, deinde in Aegypto, ubi Mende-
6 sium et metopium subito gratius factum est; mox
haec abstulit Phoenice et cyprini laudem Aegypto
reliquit. panathenaicum suum Athenae perse-
veranter optinuere. fuerat et pardalium in Tarso,
cuius etiam conpositio et mixtura oblitterata

[1] aliae *add. Warmington.*
[2] *Rackham*: Phaseli.
[3] *Mayhoff*: crocinum in.

But of seeds or plants.

shrubs [a] will for the present only be indicated by their names; however, an account will be given of their nature in their proper places.

II. Perfumes have received their names in some cases from their countries of origin, in others from the juices of which they are made, in others from trees, and in others from other causes; and the first thing proper to know about them is that their importance changes, quite often their fame having passed away. The perfume most highly praised in the old days was made on the island of Delos, but later that from the Egyptian town of Mendes ranked the highest. Nor was this only the result of the blending and combination of several scents, but the same juices gained supremacy or degenerated in various ways in different places. The iris perfume of Corinth was extremely popular for a long time, but afterwards that of Cyzicus, and similarly the attar of roses made at Phaselis, but this distinction was later taken from it by Naples, Capua and Palestrina. Oil of saffron from Soli in Cilicia was for a long time praised most highly, but subsequently that of Rhodes; vine-flower scent made in Cyprus was preferred, but afterwards that from Adramytteum, and scent of marjoram made in Cos, but afterwards quince-blossom unguent from the same place, and cyprus-scent made in Cyprus, but subsequently that made in Egypt; at this point scent from Mendes and almond-oil suddenly became more popular, but later on Phoenicia appropriated these two scents and left the credit for cyprus-scent to Egypt. Athens has persistently maintained the credit of her 'all-Athenian' perfume. There was also once an unguent called panther-scent at Tarsus, even the recipe for compounding

Places of origin, and changes of fashion.

est; narcissinum quoque ex flore narcisso desiit conponi.

7 Ratio faciendi duplex, sucus et corpus; ille olei generibus fere constat, hoc odorum: haec stymmata vocant, illa hedysmata. tertius inter haec est colos multis neglectus; huius causa addantur[1] cinnabaris et anchusa. sal adspersus olei naturam coercet; quibus anchusa adiecta est sal non additur. resina aut cummis adiciuntur ad continendum odorem in corpore: celerrime is evanescit atque defluit si non sunt haec addita.

8 Unguentorum expeditissimum fuit primumque, ut verisimile est, e bryo et balanino oleo, de quibus supra diximus. increvit deinde Mendesium e[2] balanino, resina, murra, magisque etiamnum metopium;[3] oleum hoc est amygdalis amaris expressum in Aegypto, cui addidere omphacium, cardamomum, iuncum, calamum, mel, vinum, murram, semen
9 balsami, galbanum, resinam terebinthinam. e vilissimis quidem—hodieque est ob id creditum et id e vetustissimis esse—quod constat oleo myrteo, calamo, cupresso, cypro, lentisco, mali granati cortice. sed divulgata maxime unguenta crediderim e[4] rosa, quae plurima ubique gignitur; itaque simplicissima rhodini mixtura diu fuit additis omphacio, flore rosae, crocino, cinnabari, calamo, melle, iunco, salis flore

[1] *Rackham*: adduntur.
[2] e *add. Rackham.*
[3] *Dalec.*: metopio.
[4] e *add. Rackham.*

[a] The plant 'dragon's-blood.'
[b] Oil or juice of unripe olives or grapes.

which has disappeared; narcissus-scent has also ceased to be made from the narcissus flower.

Materials for making perfumes. The recipe for making unguents contains two ingredients, the juice and the solid part, the former of which usually consists of various sorts of oil and the latter of scented substances, the oils being called 'astringents' and the scents 'sweetenings.' Together with these there is a third factor that many people neglect—that of colour, for the sake of which cinnabar[a] and alkanet should be added. A sprinkle of salt serves to preserve the properties of the oil, but to scents containing an admixture of alkanet salt is not added. Resin or gum are added to retain the scent in the solid part, as it evaporates and disappears very quickly if these are not added.

Various perfumes described. The unguent most quickly made and probably the first invented was made of bryon and behen-oil, of which we have spoken above. XII. 108. Later the Mendes scent came in, made of behen-oil, resin and myrrh, and at the present day metopium is even more popular; this is an oil made in Egypt, pressed out of bitter almonds, with the addition of omphacium,[b] cardamom, rush, flag, honey, wine, myrrh, seed of balsam, galbanum and terebinth-resin. One of the commonest unguents indeed—and at the present day it is consequently believed also to be one of the oldest—is one made of myrtle-oil, reed, cypress, cyprus, mastic-oil and pomegranate rind. But I am inclined to believe that the scents most widely used are those made from the rose, which grows in great abundance everywhere; and so the simplest compound was for a long time that of oil of roses, though additional ingredients used are omphacium, rose and saffron blossoms, cinnabar, reed, honey,

10 aut anchusa, vino. similis ratio et in crocino, additis cinnabari, anchusa, vino; similis et in sampsuchino admixtis omphacio, calamo: optimum hoc in Cypro, Mytilenis, ubi plurima sampsuchus. miscentur et viliora genera olei e myrto, lauru, quibus additur sampsuchum, lilium, fenum Graecum, murra, cassia,
11 nardum, iuncus, cinnamomum. e malis quoque cotoneis et strutheis fit oleum, ut dicemus, melinum, quod in unguenta transit admixtis omphacio, cyprino, sesamino, balsamo, iunco, cassia, habrotono. susinum tenuissimum omnium est; constat ex liliis,
12 balanino, calamo, melle,[1] cinnamo, croco, murra; et dein [2] cyprinum ex cypro et omphacio et cardamomo, calamo, aspalatho, habrotono; aliqui etiam [3] cyprinum addunt et murram et panacem: hoc optimum Sidone, mox Aegypto. si vero [4] addatur sesaminum oleum, durat et quadriennio; excitatur cinnamomo.
13 Telinum fit ex oleo recenti, cypro, calamo, meliloto, feno Graeco, melle, maro, amaraco. hoc multo erat celeberrimum Menandri poetae comici aetate; postea successit propter gloriam appellatum megalium, ex oleo balanino, balsamo, calamo, iunco, xylobalsamo, cassia, resina. huius proprietas ut ventiletur in coquendo donec

[1] *Hermolaus*: melius.
[2] *Mayhoff*: et idem.
[3] etiam? *Mayhoff*: et in.
[4] vero? *Mayhoff*: non.

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[a] Apparently the name is supposed to have come from μέγας, 'great,' but more probably it was discovered by someone named Megalus.

rush, flower of salt or else alkanet, and wine. A similar method also is used in the case of oil of saffron with the addition of cinnabar, alkanet and wine, and also a similar method in the case of oil of marjoram, by mixing in omphacium and reed; this is best in Cyprus and at Mitylene, where marjoram is very plentiful. Also cheaper kinds of oil are compounded out of myrtle and laurel with the addition of marjoram, lilies, fenugreek, myrrh, casia, nard, rush and cinnamon. There is also an oil made from the common quince and the sparrow-quince, as we shall say later; it is called melinum, and XXIII. 103.
is used as an ingredient in unguents with a mixture of omphacium, oil of cyprus, oil of sesame, balsam, rush, casia and southernwood. The most fluid of them all is susinum, made of lilies, oil of behen-nut, sweet flag, honey, cinnamon, saffron and myrrh; and next is oil of cyprus, made of cyprus, omphacium, cardamom, sweet flag, camel's thorn and southernwood; some people also add oil of cyprus and myrrh and all-heal; the best is that made at Sidon and the next best in Egypt. But if oil of sesame is added, the mixture will last as long as four years; and its scent is brought out by the addition of cinnamon.

Unguent of fenugreek is made of fresh olive-oil, cyprus, reed, melilot, fenugreek, honey, cat-thyme and scent of marjoram. This was much the most celebrated unguent in the time of Menander, the author of comedies; but afterwards its place was taken by megalium, so called because of its celebrity [a]; this was made of behen-nut oil, balsam, reed, rush, wood-balsam, casia and resin. A peculiarity of this unguent is that it must be constantly stirred while

desinat olere; rursus refrigeratum odorem suum capit.

14 Singuli quoque suci nobilia unguenta faciunt: in primis malobathrum, postea iris Illyrica et Cyzicena amaracus, herbarum utraque. vel pauca his et alia alii miscent, qui plurima alterutri mel, salis florem, omphacium, agni folia, panacem, externa omnia.
15 et prodigiosa cinnamomino pretia; adicitur cinnamo balaninum oleum, xylobalsamum, calamus, iunci, balsami semina, murra, mel odoratum. unguentorum hoc crassissimum; pretia ei a X xxxv ad X ccc. nardinum sive foliatum constat omphacio aut balanino, iunco, costo, nardo, amomo, murra, balsamo.

16 In hoc genere conveniet meminisse herbarum quae nardum Indicum imitarentur species IX a nobis esse dictas: tanta materia adulterandi est. omnia autem acutiora fiunt costo, amomo, quae maxime naris feriunt, crassiora murra suavioraque, medicinae autem utiliora croco, acerrima per se amomo; hoc et capitis dolores facit. quidam satis habent adspergere quae sunt pretiosissima ceteris decoctis, inpendio parcentes, sed non est eadem vis nisi una
17 decoctis. murra et per se unguentum facit sine oleo,

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[a] The meaning of *externa omnia* is uncertain, and is not elucidated by putting the full stop before *externa* with some editors.

boiling until it ceases to have any odour, and when it becomes cold it recovers its scent.

There are also some juices which separately produce famous perfumes—in the first place cinnamon-leaf, then the Illyrian iris and the sweet marjoram of Cyzicus, both of the herb class. Some few other ingredients are united with these, different ones by different makers, those who use the most mixing with one or the other honey, flower of salt, omphacium, leaves of the agnus castus, all-heal, and all sorts of foreign substances.[a] Also unguent of cinnamon fetches enormous prices; to cinnamon is added behen-nut oil, wood-balsam, reed, seeds of rush and balsam, myrrh and scented honey. This is the thickest in consistency of all the unguents; its prices range from 35 to 300 denarii. Spikenard or leaf-unguent is made of omphacium or else behen-nut oil, rush, costus, nard, amomum, myrrh and balsam.

Under this heading it will be suitable to recall that we mentioned nine species of plants that resemble XII. 43 f.
the Indian nard: such a large supply of material is available for purposes of adulteration. They can all be rendered more pungent by the addition of costus and amomum, which have an extremely powerful scent, and thicker in consistency and sweeter by means of myrrh, while their utility for medicine is increased by adding saffron; but they will be rendered extremely penetrating in themselves by means of amomum—this actually causes headache. Some people hold it enough to add a sprinkle of the most expensive ingredients to the others after boiling them down, as an economy, but the mixture has not the same strength unless they are all boiled down together. Myrrh even when used by itself without

stacte dumtaxat, alioqui nimiam amaritudinem adfert. cyprino viride fit, susino unguinosum, Mendesio nigrum, rhodino candidum, murra pallidum.

Haec sunt antiquae inventionis genera et postera[1] officinarum furta. nunc dicetur cumulus ipse deliciarum et summa auctoritas rei.

18 Ergo regale unguentum appellatum, quoniam Parthorum regibus ita temperatur, constat myrobalano, costo, amomo, cinnamo comaco, cardamomo, nardi[2] spica, maro, murra, casia, styrace, ladano, opobalsamo, calamo iuncoque Syriis, oenanthe, malobathro, serichato, cypro, aspalatho, panace, croco, cypiro, amaraco, loto, melle, vino. nihilque eius rei causa in Italia victrice omnium, in Europa vero tota praeter irim Illyricam et nardum Gallicum gignitur: nam vinum et rosa et myrti folia oleumque communia fere omnium terrarum intellegantur.

19 III. Siccis odoribus constant quae diapasmata vocantur; nam faecem unguenti magma appellant. inter omnis potentissimus odor quisquis novissime additur. unguenta optime servantur in alabastris, odores in oleo, quod diuturnitati eorum tanto utilius est quanto pinguius, ut ex amygdalis; et ipsa unguenta vetustate meliora. sol inimicus iis, quamobrem in umbra conduntur[3] plumbeis vasis. experimentum

[1] postera? *Mayhoff*: poster *aut* postea.
[2] cardamomo, <iride,> nardi? *Warmington.*
[3] *Edd.*: coquuntur.

[a] Iris seems to have fallen out of the list in the last sentence.

oil makes an unguent, provided that the stacte kind is used—otherwise it produces too bitter a flavour. Unguent of cyprus produces a green colour, lily unguent gives a greasy consistency, oil of Mendes makes the mixture black, attar of roses white, and myrrh gives a pale hue. XII. 68.

These are the kinds of perfumes invented in early times, and the subsequent pilferings of the factories. We will now speak of what is the very climax of luxury and the most important example of this commodity.

'Royal' perfume.

What then is called the 'royal' unguent, because it is a blend prepared for the kings of Parthia, is made of behen-nut juice, costus, amomum, Syrian cinnamon, cardamom, spikenard, cat-thyme, myrrh, cinnamon-bark, styrax-tree gum, ladanum, balm, Syrian flag and Syrian rush, wild grape, cinnamon-leaf, serichatum, cyprus, camel's thorn, all-heal, saffron, gladiolus, marjoram, lotus, honey and wine. And none of the components of this scent is grown in Italy, the conqueror of the world, and indeed none in the whole of Europe excepting the iris[a] in Illyria and nard in Gaul—for as to wine and roses and myrtle leaves and olive oil, they may be taken as belonging to pretty well all countries in common.

How to keep scents.

III. What are called sprinkling powders are made of dried scents, the dregs of unguents being termed 'magma.' Among all the scents employed the one added last is the most powerful. Unguents keep best in alabaster boxes, scents when mixed with oil, and the fatter it is, as for instance oil of almonds, the better it helps to preserve them for a long time; and the unguents themselves improve with age. Sunshine is detrimental to them, and therefore they are stored in the shade, in vessels made of lead.

eorum inversa manu capitur, ne carnosae partis calor vitiet.

20 IV. Haec est materia luxus e cunctis maxume supervacui; margaritae enim gemmaeque ad heredem tamen transeunt, vestes prorogant tempus, unguenta ilico expirant ac suis moriuntur horis. summa commendatio eorum ut transeunte femina odor invitet etiam aliud agentes—exceduntque quadringenos X librae! tanti emitur voluptas aliena,
21 etenim odorem qui gerit ipse non sentit. si tamen et haec aliqua differentia signanda sunt, in M. Ciceronis monumentis invenitur unguenta gratiora quae terram quam quae crocum sapiant, quando etiam corruptissimo in genere magis tamen iuvat quaedam ipsius vitii severitas. sed quosdam crassitudo maxime delectat spissum appellantes, linique
22 iam, non solum perfundi unguentis gaudent. vidimus etiam vestigia pedum tingui, quod monstrasse M. Othonem Neroni principi ferebant: quaeso,[1] qualiter sentiretur iuvaretque ab ea parte corporis? nec non aliquem e privatis audivimus iussisse spargi parietes balnearum unguento atque Gaium principem solia temperari ac, ne principale videatur hoc

[1] *Edd.*: quaeso ut.

When being tested they are put on the back of the hand, to avoid their being damaged by the warmth of the fleshy part.

IV. Perfumes serve the purpose of the most superfluous of all forms of luxury; for pearls and jewels do nevertheless pass to the wearer's heir, and clothes last for some time, but unguents lose their scent at once, and die in the very hour when they are used. Their highest recommendation is that when a woman passes by her scent may attract the attention even of persons occupied in something else —and their cost is more than 400 denarii per pound! All that money is paid for a pleasure enjoyed by somebody else, for a person carrying scent about him does not smell it himself. Still, if even these matters deserve to be graded after a fashion, we find in the works left by Marcus Cicero that unguents that have an earthy scent are more agreeable than those smelling of saffron, inasmuch as even in a class of things where corruption is most rife, nevertheless some degree of strictness in vice itself gives more enjoyment. But there are people who get most pleasure from unguent of a dense consistency, which they call 'thick essence,' and who enjoy smearing themselves with perfume and not merely pouring it over them. We have even seen people put scent on the soles of their feet, a practice said to have been taught to the emperor Nero by Marcus Otho; pray, how could it be noticed or give any pleasure from that part of the body? Moreover, we have heard that somebody of private station gave orders for the walls of his bathroom to be sprinkled with scent, and that the Emperor Caligula had the bath-tubs scented, and so also later did one of the slaves

Luxurious use of scent.

23 bonum, et postea quendam e servis Neronis. maxime tamen mirum est hanc gratiam penetrasse et in castra: aquilae certe ac signa, pulverulenta illa et cuspidibus horrida, unguuntur festis diebus, utinamque dicere possemus quis primus instituisset! ita est nimirum, hac mercede corruptae orbem terrarum devicere aquilae! ista patrocinia quaerimus vitiis, ut per hoc ius sub casside unguenta sumantur.

24 V. Quando id primum ad Romanos penetraverit non facile dixerim. certum est Antiocho rege Asiaque devictis urbis anno DLXV P. Licinium Crassum L. Iulium Caesarem censores edixisse ne quis venderet unguenta[1] exotica: sic enim appellavere. at,
25 Hercules, iam quidam etiam in potus addunt, tantique est amaritudo ut odore prodigo fruatur ex utraque parte corpus.[2] L. Plotium, L. Planci bis consulis censorisque fratrem, proscriptum a triumviris in Salernitana latebra unguenti odore proditum constat, quo dedecore tota absoluta proscriptio est; quis enim non merito iudicet perisse tales?

26 VI. Cetero terrarum omnium Aegyptus accommodatissima unguentis, ab ea Campania est copia rosae. Iudaea vero incluta est vel magis palmis, quarum natura nunc dicetur. sunt quidem et in Europa volgoque Italia, sed steriles. ferunt in maritimis

[1] [unguenta]? (*cf. autem Plaut. Most.* 42 non omnes possunt olere unguenta exotica) *Rackham.*
[2] *V.l.* fruantur . . . corporis.

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[a] Octavian, Antony and Lepidus, 43 B.C.

of Nero—so that this must not be considered a privilege of princes! Yet what is most surprising is that this indulgence has found its way even into the camp: at all events the eagles and the standards, dusty as they are and bristling with sharp points, are anointed on holidays—and I only wish we were able to say who first introduced this custom! No doubt the fact is that our eagles were bribed by this reward to conquer the world! We look to their patronage forsooth to sanction our vices, so as to have this legitimation for using hair-oil under a helmet!

Introduction of scent at Rome.

V. I could not readily say when the use of unguents first made its way to Rome. It is certain that in 189 B.C. the censors Publius Licinius Crassus and Lucius Julius Caesar issued a proclamation forbidding any sale of 'foreign essences'—that being the regular name for them. But, good heavens! nowadays some people actually put scent in their drinks, and it is worth the bitter flavour for their body to enjoy the lavish scent both inside and outside. It is a well-known fact that Lucius Plotius, the brother of Lucius Plancus who was twice consul and censor, when proscribed by the Triumvirs[a] was given away in his hiding-place at Salerno by the scent of the unguent he had been using—a disgrace that acquitted the entire proscription of guilt, for who would not consider that people of that sort deserved to die?

Palm-tree scent.

VI. In other respects Egypt is of all the countries in the world the best adapted for the production of unguents, but Campania with its abundance of roses runs it close. But Judaea is even more famous for its palm-trees, the nature of which will now be described. It is true that there are also palms in Europe, and they are common in Italy, but these are

Hispaniae fructum, verum inmitem, dulcem in
27 Africa sed statim evanescentem. contra in oriente
ex iis vina gentiumque aliquis panis, plurimis vero
etiam quadrupedum cibus. quamobrem iure di-
centur externae; nulla est in Italia sponte genita,
nec in alia parte terrarum nisi in calida, frugifera
28 vero nusquam nisi in fervida. VII. Gignitur levi
sabulosaque terra, maiore in parte et nitrosa. gaudet
riguis totoque anno bibere, cum amet sitientia.
fimo [1] quidam etiam laedi putant, Assyriorum pars
aliqua si non rivis misceat. genera earum plura, et
prima fruticem [2] non excedentia, sterilem hunc,
aliubi et ipsum fertilem, brevisque rami. orbe
foliorum tectorii vicem hic parietibus plerisque in
29 locis praestat contra aspergines. est et proceriori-
bus silva, arbore ex ipsa foliorum aculeo fruticante
circa totas pectinatim; quas silvestres intellegi
necesse est, incerta tamen libidine etiam mitioribus
se miscent. reliquae teretes atque procerae, densis
gradatisque corticum pollicibus aut orbibus faciles ad
scandendum orientis se populis praebent vitilem sibi
arborique indutis circulum mira pernicitate cum

[1] *V.l.* amet anno sitienti. a fimo.
[2] fruticem *edd.*: frutice.

barren. In the coastal regions of Spain they do bear fruit, but it does not ripen, and in Africa the fruit is sweet but will not keep for any time. On the other hand in the east the palm supplies the native races with wine, and some of them with bread, while a very large number rely on it also for cattle fodder. For this reason, therefore, we shall be justified in describing the palms of foreign countries; there are none in Italy not grown under cultivation, nor are there in any other part of the earth except where there is a warm climate, while only in really hot countries does the palm bear fruit. VII. It grows in a light sandy soil and for the most part in one containing nitrates. It likes running water, and to drink all the year round, though it loves dry places. Some people think that dung actually does it harm, while a section of the Assyrians think that this happens if they do not mix the dung with water from a stream. There are several kinds of palm, beginning *Varieties of palm.* with kinds not larger than a shrub—a shrub that in some cases is barren, though in other districts it too bears fruit—and having a short branch. In a number of places this shrub-palm with its dome of leaves serves instead of plaster for the walls of a house, to prevent their sweating. Also the taller palms make a regular forest, their pointed foliage shooting out from the actual tree all round them like a comb—these it must be understood are wild palms, though they also have a wayward fancy for mingling among the cultivated varieties. The other kinds are rounded and tall, and have compact rows of knobs or circles in their bark which render them easy for the eastern races to climb; they put a plaited noose round themselves and round the tree, and the

30 homine subeuntem. coma omnis in cacumine et
pomum est, non inter folia hoc ut in ceteris sed suis
inter ramos palmitibus racemosum, utraque natura
uvae atque pomi. folia cultrato mucrone lateribus
in sese bifida tabellas primum demonstravere
geminas, nunc ad funes vitiliumque nexus et capitum
levia umbracula finduntur.

31 Arboribus, immo potius omnibus quae terra gignat
herbisque etiam utrumque esse sexum diligentissimi
naturae tradunt, quod in plenum satis sit dixisse hoc
in loco, nullis tamen arboribus manifestius. mas in
palmite floret, femina citra florem germinat tantum
spicae modo. utrisque autem prima nascitur pomi
caro, postea lignum intus; hoc est semen eius: argu-
mentum quod parvae sine hoc reperiuntur in eodem
32 palmite. est autem oblongum, non ut olivis orbicu-
latum, praeterea caesum a dorso pulvinata fissura, et
in alvo media plerisque umbilicatum: inde primum
spargitur radix. seritur autem pronum et bina
iuxta composita semina superque totidem, quoniam
infirmae[1] singulis plantae,[2] quaternae coalescunt.
33 multis candidisque lignum hoc a carnibus discernitur
tunicis, aliis corpori adhaerentibus, laxeque distans

[1] infirma e *Mayhoff.*
[2] *Ian*: planta est.

noose goes up with the man at an astonishingly rapid speed. All the foliage is at the top of the tree, and so is the fruit, which is not among the leaves as in all other trees, but hanging in bunches from shoots of its own between the branches, and which has the nature of both a cluster and a single fruit. The leaves have a knife-like edge at the sides and are divided into two flanges that fold together; they first suggested folding tablets for writing, but at the present day they are split up to make ropes and plaited wicker-work and parasols.

Sex of palms. Reproduction from seed.

The most devoted students of nature report that trees, or rather indeed all the products of the earth and even grasses, are of both sexes, a fact which it may at this place be sufficient to state in general terms, although in no trees is it more manifest than in the palm. A male palm forms a blossom on the shoot, whereas a female merely forms a bud like an ear of corn, without going on to blossom. In both male and female, however, the flesh of the fruit forms first and the woody core afterwards; this is the seed of the tree—which is proved by the fact that small fruits without any core are found on the same shoot. The seed is oblong in shape and not rounded like an olive-stone, and also it is split at the back by a bulging cleft, and in most cases shaped like a navel at the middle of the bulge: it is from here that the root first spreads out. In planting the seed is laid front-side downward, and a pair of seeds are placed close together with two more above them, since a single seed produces a weak plant, but the four shoots unite in one strong growth. This woody core is divided from the fleshy parts by a number of white coats, others clinging closely to its body; and it is loose and separ-

tantum cacuminis[1] filo adhaeret. caro maturescit
anno; quibusdam tamen in locis, ut in Cypro, quam-
quam ad maturitatem non perveniat, grato sapore
dulcis est. folium ibi latius, fructus quam reliquis
rotundior, nec ut devoretur corpus, verum ut expua-
34 tur suco modo expresso. et in Arabia languide
dulces traduntur esse palmae, quamquam Iuba apud
Scenitas Arabas praefert omnibus saporibus quam
vocant dablan. cetero sine maribus non gignere
feminas sponte edito nemore confirmant, circaque
singulos plures nutare in eum pronas blandioribus
35 comis; illum erectis hispidum adflatu visuque ipso et
pulvere etiam reliquas maritare; huius arbore
excisa viduvio[2] post sterilescere feminas. adeoque
est veneris intellectus ut coitus etiam excogitatus sit
ab homine e maribus flore ac lanugine, interim vero
tantum pulvere insperso feminis.

36 VIII. Seruntur autem palmae et trunco duum cubi-
torum longitudine a cerebro ipso arboris fissuris diviso
atque defosso. et ab radice avolsae vitalis est satus et
ramorum tenerrimis. in Assyria ipsa quoque arbor
strata in solo umido tota radicatur, sed in frutices,

[1] cacumini *Gelen.*
[2] *Sillig*: biduo *et alia.*

ate, only attached by a thread at its top end. The flesh takes a year to ripen, though in some places, for instance, Cyprus, it has a pleasant sweet flavour even though it does not reach maturity. In Cyprus the leaf is broader and the fruit rounder than it is elsewhere, though people there do not eat the body of the fruit, but spit it out after merely squeezing out the juice. Also in Arabia the palm is said to have a sickly sweet taste, although Juba states that he prefers the palm that grows in the territory of the Tent-dweller Arabs, which they call the *dablas*, to all other kinds for flavour. For the rest, it is stated that in a palm-grove of natural growth the female trees do not produce if there are no males, and that each male tree is surrounded by several females with more attractive foliage that bend and bow towards him; while the male bristling with leaves erected impregnates the rest of them by his exhalation and by the mere sight of him, and also by his pollen; and that when the male tree is felled the females afterwards in their widowhood become barren. And so fully is their sexual union understood that mankind has actually devised a method of impregnating them by means of the flower and down collected from the males, and indeed sometimes by merely sprinkling their pollen on the females.

Propagation of palms by layering and other methods.

VIII. Palms are also propagated by layering, the trunk for a length of three feet from the actual brain of the tree being divided by incisions and dug into the ground. Also a slip torn off from the root makes a hardy growth when planted, and so does one from the youngest of the branches. In Assyria the tree itself, too, is laid in a moist soil and throws out roots along its whole length, but these grow into shrubs

37 non in arborem; ergo plantaria instituunt anniculasque transferunt et iterum bimas, gaudent enim mutatione sedis, verna alibi, in Assyria autem circa canis ortus. nec ferro attingunt ibi novellas, sed religant comas ut in altitudinem exeant. robustas deputant crassitudinis gratia, semipedales ramorum truncos relinquentes, qui decisi alibi necant matrem.

38 diximus salsum ab his solum diligi; ergo ubi non est tale salem aspergunt, non radicibus sed longius paulo. quaedam in Syria et Aegypto in binos se dividunt truncos, in Creta et in ternos, quaedamque et quinos. ferunt statim in trimatu, in Cypro vero, Syria, Aegypto, quadrimae, aliae quinquennes, altitudine hominis, nullo intus pomi ligno quamdiu sunt novellae, ob id spadonum accepto nomine.

39 IX. Genera earum multa. sterilibus ad materias operumque lautiora utitur Assyria et tota Persis. sunt et caeduae palmarum quoque silvae rursus germinantes ab radice succisae; dulcis medulla earum in cacumine, quod cerebrum appellant, exemptaque vivunt, quod non aliae. vocantur autem chamaeropes, folio latiore ac molli ad vitilia

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[a] *I.e.* forms no seeds.

and not into a tree; consequently the growers plant cuttings, and transplant the young trees when a year old and again when two years old, for they like a change of position—this is done in the spring in other countries, but in Assyria about the rising of the Dog-star. Also there they do not touch the young trees with a knife, but tie back the leafy shoots to make them grow upward to a considerable height. When the trees are strong they prune them down so as to make them grow thicker, leaving the stumps of the branches six inches long; to lop them at any other point kills the mother tree. We have said § 28.
above that palms like a salt soil; consequently in places where the ground is not of that nature they sprinkle salt on it, not at the roots of the trees but a little farther off. Some palms in Syria and Egypt divide into two trunks, and in Crete even into three, and some even into five. These begin to bear in three years, but the palms in Cyprus, Syria and Egypt bear when four years old, and others when five, the tree being then the height of a man; as long as the trees are young the fruit has no woody part inside,[a] and consequently they are called 'eunuchs.'

Varieties of palm.

IX. Palm-trees are of many varieties. The barren kinds are used in Assyria and throughout the whole of Persia for building timber and for the more luxurious articles of manufacture. Also there are forests of palms grown for timber which when felled send out shoots again from the root; the pith of these at the top, which is called their 'brain,' has a sweet taste, and after it has been removed the trees continue to live, which is not the case with other sorts of palm. The name of this tree is the chamaerops, and it has an exceptionally broad soft leaf which is extremely

utilissimo, copiosae in Creta, sed magis in Sicilia.
40 e palmis prunae vivaces ignisque lentus. fructiferarum aliis brevius lignum in pomo, aliis longius, his mollius, illis durius, quibusdam osseum limarum dente contra fascinantes religione politum. aliud pluribus vestitum paucioribusve tunicis, aliud crassioribus tenuioribusve. ita fiunt undequinquaginta genera, si quis omnium persequi velit nomina etiam
41 barbara vinorumque ex iis differentias. clarissimae omnium, quas regias appellavere ob honorem, quoniam regibus tantum Persidis servabantur, Babylone natae uno in horto Bagou: ita vocant spadones, qui apud eos etiam regnavere. hortus ille numquam nisi dominantis in aula fuit.

42 At in meridiano orbe praecipuam optinent nobilitatem syagri proximamque margarides. hae breves, candidae, rotundae, acinis quam balanis similiores, quare et nomen a margaritis accepere. una earum arbor in Chora esse traditur, una et syagrorum, mirumque de ea accipimus, cum phoenice ave, quae putatur ex huius palmae argumento nomen accepisse, intermori ac renasci ex seipsa, eratque, cum prode-

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[a] The fabulous bird from Arabia (Herodotus) or India (Philostratus): φοῖνιξ, 'date-palm.'

useful for wicker-work; it grows in large numbers in Crete, but even more in Sicily. Palmwood makes charcoal that lasts a long time and burns slowly. In the palms that bear fruit the core of the fruit is shorter in some cases than in others and also softer; in some cases it is of a bony substance, and when polished with the edge of a file is used by superstition as a charm against witchcraft. The core is wrapped in several coats which in some cases vary in number and in others in thickness. Consequently there are forty-nine kinds of palm, if one cared to go through the names of them all, including those that have foreign names, and the varieties of wine that are extracted from them. The most famous of all is honoured by the name of the royal palm, because it used to be reserved for the kings of Persia alone; it grew only at Babylon in the Garden of Bagoüs—the Persian word for a eunuch, some of these having actually been kings in Persia. This garden was always kept within the precincts of the ruler's court.

Varieties of dates.

In the southern part of the world the kind called in Greek the wild-boar date is held in the highest repute, and next to it ranks the Maldive nut date. The latter is a short, rounded fruit of a white colour, more like a grape than a Phoenician date, for which reason it has also received the name of pearl-date. It is said that only one palm-tree of this kind exists, at Chora, and the same is the case with the wild-boar date; and a remarkable story has come to us about this tree, to the effect that it dies off and then comes to life again of itself—a peculiarity which it shares with the phoenix,[a] which is thought to have taken its name from the suggestion of this palm-tree: the tree was bearing fruit at the time when

43 rem, fertilis. pomum ipsum grande, durum, horridum et a ceteris generibus distans sapore quodam ferinae in apris evidentissimo, quae causa nominis. quarta auctoritas sandalidum a similitudine appellatarum; iam in Aethiopiae fine quinque harum qui plurimas arbores tradunt, non raritate magis quam
44 suavitate mirabiles. ab his caryotae maxime celebrantur, et cibo quidem sed et suco uberrimae, ex quibus praecipua vina orienti, inimica[1] capiti, unde pomo nomen. sed ut copia ibi atque fertilitas, ita nobilitas in Iudaea, nec in tota sed Hiericunte maxime quamquam laudata et Archelaide et Phaselide atque Liviade, gentis eiusdem convallibus. dos iis praecipua suco pingui lactentibus quodamque vini
45 sapore ut[2] in melle praedulci. sicciores ex hoc genere nicolai, sed amplitudinis praecipuae, quaterni cubitorum longitudinem efficiunt. minus speciosae sed sapore caryotarum sorores et ob hoc adelphides dictae proximam suavitatem habent, non tamen eandem. tertium ex his genus, patetae, nimio liquore abundat rumpitque se pomi ipsius etiam in sua matre ebrietas, calcatis similis.

46 Suum genus e sicciore turba dactylis, praelonga

[1] *Mueller*: iniqua.
[2] ut *add. Rackham.*

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[a] Really meaning 'nut-shaped,' but supposed to be from κάρα and ὑώδης and to mean 'pig-headed.'

[b] Called from Nicolaus of Damascus a Peripatetic philosopher, who, when visiting Rome with Herod the Great, presented the finest dates procurable to Augustus: Athenaeus XIV. 22.

[c] More probably the name was due to their growing in pairs on the same stalk.

this book was published. The actual fruit is large, hard and prickly, and differs from all the other kinds by having a gamey sort of smell that is most noticed in wild boars, which is the reason for its name. The sandalis date, so called from its resemblance to a sandal, ranks fourth; of this kind again there are said to be at the most five trees in existence, on the border of Ethiopia, and they are as remarkable for the sweetness of their fruit as they are for their rarity. Next to these the most famous are the caryotae, which supply a great deal of food but also of juice, and from which the principal wines of the East are made; these strongly affect the head, to which the date owes its name.[a] But not only are these trees abundant and bear largely in Judaea, but also the most famous are found there, and not in the whole of that country but specially in Jericho, although those growing in the valleys of Archelais and Phaselis and Livias in the same country are also highly spoken of. Their outstanding property is the unctuous juice which they exude and an extremely sweet sort of wine-flavour like that of honey. The Nicholas date[b] belonging to this class is not so juicy but exceptionally large in size, four put end to end making a length of eighteen inches. The date that comes next in sweetness is less attractive to look at, but in flavour is the sister of the caryotae and consequently is called in Greek the sister-date.[c] The third class among these, the pateta, has too copious a supply of juice, and the excess of liquor of the fruit itself bursts open even while on the parent tree, looking like dates that have been trodden on.

Of the many drier dates the finger-date forms a class of its own: it is a very long slender date,

gracilitate curvatis interim. quos[1] ex his honori deorum damus chydaeos appellavit Iudaea, gens
47 contumelia numinum insignis. in totum arentes Thebaidi atque Arabiae macroque corpore exiles, et adsiduo vapore torrente crustam verius quam cutem obducunt. in ipsa quidem Aethiopia friatur haec—tanta est siccitas—et farinae modo spissatur in panem. gignitur autem in frutice ramis cubitalibus folio latiore, pomo rotundo sed maiore quam mali amplitudine, coecas vocant; triennio maturescunt, semperque frutici pomum est subnascente
48 alio. Thebaidis fructus extemplo in cados conditur cum sui ardoris anima; ni ita fiat, celeriter expirat marcescitque non retostus furnis.

E reliquo genere plebeiae videntur Syriae[2] quas tragemata appellant; nam in alia parte Phoenices Ciliciaeque populari etiam nomine a nobis appellantur
49 balani. eorum quoque plura genera; differunt figura rotunditatis aut proceritatis, differunt et colore, nigriores ac rubentes: nec pauciores fico traduntur colores, maxime tamen placent candidi. distant et magnitudine, prout multi cubitum effecere, quidam sunt non ampliores faba. servantur hi demum qui nascuntur in salsis atque sabulosis, ut in

[1] *Detlefsen*: nam quas (namque uvas *Mueller*).
[2] *Rackham*: Syriae et.

[a] χυδαῖος, common, vulgar.
[b] See p. 134, note *b*.

sometimes of a curved shape. The variety of this class which we offer to the honour of the gods is called chydaeus [a] by the Jews, a race remarkable for their contempt for the divine powers. All over the Thebaid and Arabia the dates are dry and small, with a shrivelled body, and as they are scorched by the continual heat their covering is more truly a rind than a skin. Indeed in Ethiopia itself the climate is so dry that the skin of these dates is rubbed into powder and kneaded to make loaves of bread like flour. This date grows on a shrub,[b] with branches eighteen inches long, a rather broad leaf, and fruit of a round shape, but larger than the size of an apple. The Greek name for this date is koix; it comes to maturity in three years, and the shrub always has fruit on it, another date sprouting in place of one picked. The date of the Thebaid is packed into casks at once, before it has lost the aroma of its natural heat; if this is not done, it quickly loses its freshness and dries up unless it is warmed up again in an oven.

Of the rest of the date kind the Syrian variety, called sweetmeats, seem to be a low-class fruit; for those in the other part of Phoenicia and Cilicia have the local name of acorn-dates, also used by us. These too are of several kinds, differing in shape, some rounder and others longer, and also in colour, some being blacker and others reddish; indeed, they are reported to have as many varieties of colour as the fig, though the white ones are the most in favour. They also differ in size, many having reached half a yard in length while some are no larger than a bean. The best kinds for keeping are those that grow in salt and sandy soils, for instance

Iudaea atque Cyrenaica Africa, non item in Aegypto, Cypro, Syria, Seleucia Assyriae, quamobrem sues et
50 reliqua animalia iis[1] saginantur. vitiati aut vetusti eius pomi signum est decidisse candidam verrucam qua racemo adhaeserint. Alexandri milites palmis viridibus strangulati sunt; in Gedrosis id factum est pomi genere, alibi copia evenit, est enim tanta suavitas musteis ut finis mandendi non nisi periculo fiat.

51 X. Syria praeter hanc peculiares habet arbores: in nucum genere pistacia nota—prodesse adversus serpentium morsus traduntur et potu et cibo—in ficorum autem Caricas et minores eiusdem generis quas cottana vocant, item pruna in Damasco monte nata et myxas, utramque iam familiarem Italiae. e myxis in Aegypto et vina fiunt.

52 XI. Iunipiri similem habet Phoenice cedrum minorem. duo eius genera, Lycia et Phoenicia, differunt folio; nam quae durum, spinosum, acutum habet oxycedros vocatur, ramosa et nodis infesta altera, odore praestans. fructum ferunt myrti magnitudine, dul-
53 cem sapore. et maioris cedri duo genera; quae floret fructum non fert, fructifera non floret, et in ea antecedentem fructum occupat novus. semen eius cupresso simile. quidam cedrelaten vocant. ex hac

[1] iis? *Mayhoff*: ex iis.

[a] Damson (Damascene).

[b] *Cedrus* usually = prickly juniper, but here the Phoenician cedar is also described and is elsewhere sometimes referred to.

in Judaea and the Cyrenaic district of Africa; the dates in Egypt, Cyprus, Syria and Seleucia in Assyria do not keep, and consequently are used for fattening swine and other stock. It is a sign that the fruit is spoilt or old if the white excrescence by which the dates are attached to the cluster has fallen off. Soldiers of Alexander were choked by eating green dates; this effect was produced in the Gedrosi country by the quality of the fruit, and occurs elsewhere from eating it to excess, for fresh dates are so sweet that people will not stop eating them except because of the danger.

Other Syrian fruit trees.

X. Syria has several trees that are peculiar to it beside this date; in the class of nuts the pistachio is well-known: it is reported that taken either in food or in drink it is a remedy for snake-bite. In the fig class Syria has the Carians and smaller figs of the same class called cottana, also the plum [a] that grows on Mount Damascus and the myxa, both now acclimatized in Italy. In Egypt the myxa is also used for making wine.

The Phoenician cedar.

XI. Phoenicia has a small variety of cedar that resembles a juniper. It is of two kinds, the Lycian and the Phoenician, which have different leaves; the one with a hard, prickly, pointed leaf is called the oxycedros, while the other is a branchy tree and the wood is full of knots and has a better scent. They bear fruit the size of a myrtle-berry, with a sweet taste. The larger cedar also has two kinds, of which the flowering one bears no fruit, while the one that bears fruit does not flower, and in its case the previous fruit is replaced by a new one. Its seed is like that of the cypress. Some people call this tree the cedar-pine. From it is obtained the resin held in the highest

resina laudatissima; materiae vero ipsi aeternitas, itaque et simulacra deorum ex ea factitaverunt: cedrinus est Romae in delubro Apollo Sosianus Seleucia advectus. cedro similis in Arcadia est arbor, in Phrygia frutex vocatur cedrys.

54 XII. Syria et terebinthum habet. ex iis mascula est sine fructu, feminarum duo genera: alteri fructus rubet lentis magnitudine, alteri pallidus cum vite maturescit, non grandior faba, odore iucundior, tactu osus. resincirca Iden Troadis et in Macedonia brevis arbor haec atque fruticosa, in Damasco Syriae magna. materies ei admodum lenta ac fidelis ad vetustatem, nigri splendoris, flos racemosus olivae modo, sed rubens, folia densa. fert et folliculos emittentes quaedam animalia ceu culices lentoremque
55 resinosum qui et ex cortice erumpit. XIII. Et rhus Syriae mascula fert sterili femina, folio ulmi paulo longiore et piloso, foliorum semper inter se contrariis pediculis, gracili brevique ramo. pelles candidae conficiuntur iis. semen lenti simile cum uva rubescit, quod vocatur rhus, medicamentis necessarium.

56 XIV. Et Aegypto multa genera quae non aliubi, ante omnia ficus ob id Aegyptia cognominata.

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[a] By Gaius Sosius, quaestor 66 B.C., who later held commands in the east under Antony.

favour, while its actual timber lasts for ever, and consequently it has been the regular practice to use it even for making statues of the gods—the Apollo Sosianus in a shrine at Rome, which was brought[a] from Seleucia, is made of cedar-wood. There is a tree resembling the cedar in Arcadia, and a shrub in Phrygia is called the cedrys.

XII. Syria also has the turpentine-tree. Of this the male variety has no fruit, but the female has two kinds of fruit, one of them ruddy and the size of a lentil, while the other is pale, and ripens at the same time as the grape; it is no larger in size than a bean, has a rather agreeable scent, and is sticky to the touch. Round Mount Ida in the Troad and in Macedonia this is a low-growing shrub-like tree, but at Damascus in Syria it is big. Its wood is fairly flexible and remains sound to a great age; it is of a shiny black colour. The flower grows in clusters like the olive, but is crimson in colour, and the foliage is thick. It also bears follicles out of which come insects resembling gnats, and which produce a sticky resinous fluid which also bursts out from its bark. XIII. Also the male sumach-tree of Syria is productive, the female being barren; the leaf is that of an elm only a little longer, covered with down, and the footstalks of the leaves always lying alternately in opposite directions; the branches are slender and short. The sumach is used for bleaching leather. The seed, which resembles a lentil, turns red at the same time as the grapes; it is called rhus and is required for certain drugs.

The terebinth.

The sumach.

XIV. Egypt also has many kinds of trees not found anywhere else, before all a fig, which is consequently called the Egyptian fig. The tree resembles a mul-

The Egyptian fig.

arbor moro similis folio, magnitudine, aspectu, pomum fert non ramis sed caudice ipso, idque ficus est praedulcis sine granis interioribus, perquam fecundo proventu, scalpendo tantum ferreis unguibus,
57 aliter non maturescit; sed cum hoc factum est, quarto die demetitur alio subnascente, septeno ita numerosa partu per singulas aestates, item[1] multo lacte abundante. subnascitur, etiamsi non scalpatur, fetus quater aestate prioremque expellit immaturum. materies proprii generis inter utilissimas. caesa statim stagnis mergitur [hoc est eius siccari][2] et primo sidit, postea fluitare incipit, certoque eam sugit alienus umor qui aliam omnem rigat. cum innatare coeperit, tempestivae habet signum.

58 XV. Huic similis quadamtenus quae vocatur Cypria ficus in Creta; nam et illa[3] caudice ipso fert pomum et ramis cum in crassitudinem adolevere. sed haec germen emittit sine ullis foliis radici simile. caudex arboris similis populo, folium ulmo. fructus quaternos fundit, totiens et germinat, sed grossus eius non maturescit nisi incisura emisso lacte. suavitas et interiora fici, magnitudo sorbi.

59 XVI. Similis et quam Iones ceroniam[4] vocant, trunco et ipsa fertilis—pomum[5] siliqua—ob id

[1] item? *Mayhoff*: ita (*om. v.l.*).
[2] *Secl. Rackham* (est eis *Dalec.*).
[3] *V.l.* ipsa.
[4] *Edd. e Theophr.*: ceraunia.
[5] *V.l.* sed pomum.

berry in foliage, size and appearance; it bears its fruit not on the branches but on the trunk itself, and this is an exceedingly sweet fig without seeds inside it. There is an extremely prolific yield, but only if incisions are made in the fruit with iron hooks, otherwise it does not ripen; but when this is done, it can be plucked three days later, another fig forming in its place, the tree thus scoring seven crops of extremely juicy figs in a summer. Even if the incisions are not made new fruit forms under the old and drives out its predecessor before it is ripe four times in a summer. The wood of this fig is of a peculiar kind, and is one of the most useful there is. As soon as it is cut it is plunged into a marsh, and at first sinks to the bottom, but afterwards begins to float, and it is clear that moisture not belonging to it, which soaks into all other timber, drains the sap out of this. When it begins to float on the surface, this is its sign that the timber is ready for use.

XV. A tree to some extent resembling the Egyptian fig is one in Crete called the Cyprian fig, as it also bears fruit on its actual trunk and on its branches when they have grown to thickness. But the Cyprian fig puts out a bud without any leaves, resembling a root. The trunk of the tree is like a poplar, and the leaf like an elm. It bears fruit four times a year, and also buds the same number of times, but its unripe figs will not ripen unless an incision is made in them to let out the juice. They have the sweet taste and the inside of the common fig, and are the size of a service-tree berry. *The Cyprian fig.*

XVI. Another similar tree is the one called by the Ionians the ceronia, which also buds from the trunk, the fruit being a pod, which has consequently *St. John's bread.*

quidam Aegyptiam ficum dixere errore manifesto; non enim in Aegypto nascitur sed in Syria Ioniaque et circa Cnidum atque in Rhodo, semper comantibus foliis, flore candido cum vehementia odoris, plantigera imis partibus et ideo superficie flavescens, sucum auferente subole. pomo antecedentis anni circa canis ortus detracto statim alterum parit, postea floret per arcturum, hieme fetus eius nutriente.

60 XVII. Aegyptus et perseam[1] arborem sui generis habet, similem piro, folia retinentem. fertilitas adsidua eius, subnascente crastino fructu, maturitas etesiarum adflatu. pomum longius piro, inclusum amygdalae putamine et corio colore herbido, sed ubi nux illi, huic prunum differens brevitate ac mollitia et, quamvis blandiatur praedulcis suavitas, innocuum.
61 materies bonitate, firmitudine, nigritia quoque nihil differens a loto; simulacra et ex ea factitavere. non eadem gratia quamquam fideli materiae ex arbore quam balanum appellavimus, magna ex parte contor-
62 ta; navalis itaque tantum est. XVIII. At e diverso cuci in magno honore, palmae similis, quando et eius foliis utuntur ad textilia; differt quod in bracchia ramorum spargitur. pomo magnitudo quae manum

[1] *Edd. e Theophr.*: Persicum.

[a] The *Mimusops Schimperi*.
[b] *Hyphaene thebaica*.

been called by some the Egyptian fig. But this is clearly a mistake, as it does not grow in Egypt but in Syria and Ionia, and also in the neighbourhood of Cnidus and on the island of Rhodes. It is always in full foliage, and it has a white flower with a powerful scent. It sends out shoots at the lower parts, and consequently is of a yellow colour above ground, as the suckers drain away the sap. If the fruit of the preceding year is picked about the rising of the Dog-star, it at once grows a second crop, after which it blossoms through the period of the Bear-ward, and the winter nourishes its fruit.

XVII. Egypt also possesses a tree of a peculiar kind called the persea,[a] which resembles a pear but is an evergreen. It bears fruit without intermission, as when it is plucked a fresh crop sprouts the next day, but its season for ripening is when the midsummer winds are blowing. The fruit is longer than a pear, and is enclosed in a shell like an almond and a rind the colour of grass, but where the almond has a kernel this has a plum, which differs from an almond kernel in being short and soft, and although temptingly sweet and luscious, is quite wholesome. The wood is just like that of the lotus for goodness and soundness and also in its black colour, and it too has habitually been used for making statues. The timber of the tree we have mentioned called the behen-nut, although reliable, is not so highly valued, as a large proportion of it has a twisted grain, so it is only used for ship-building. XVIII. But on the contrary the cuci[b] is in great esteem; this tree resembles a palm in that its leaves are also used for textiles, but it differs because it spreads out into branches like arms. The fruit is of a size that fills

Egyptian trees: persea, cucus, thorn, plum.

§ 48.

impleat, colos fulvus, commendabili suco ex austero dulci. lignum intus grande firmaeque duritiae, ex quo velares detornant anulos; in eo nucleus dulcis dum recens est: siccatus durescit ad infinitum ut mandi non possit nisi sit[1] pluribus diebus maceratus. materies crispioris elegantiae et ob id Persis gratissima.

63 XIX. Nec minus spina celebratur in eadem gente dumtaxat nigra, quoniam incorrupta etiam in aquis durat, ob id utilissima navium costis; e[2] candida[3] facile putrescunt. aculei spinarum et in foliis, semen in siliquis quo coria perficiunt gallae vice. flos et coronis iucundus et medicamentis utilis; manat et cummis ex ea. sed praecipua utilitas quod caesa anno tertio resurgit. circa Thebas haec, ubi et quercus et persea et oliva, ccc a Nilo stadiis silvestri tractu
64 et suis fontibus riguo. Ibi et prunus Aegyptia, non dissimilis spinae proxime dictae, pomo mespili, maturescens bruma nec folia demittens. lignum in pomo grande, sed corpus ipsum natura et copia messium instar incolis; purgatum enim tundunt servantque
65 eius offas. silvestris fuit et circa Memphin regio tam vastis arboribus ut terni non quirent circumplecti,

[1] *Mayhoff*: nisi si.
[2] e *add.*? *Mayhoff*.
[3] *V.l.* candide (*edd.* candidae).

the hand; its colour is yellow and its juice has an attractive sweet taste, with a touch of astringency. It has a large and very hard shell inside, which is used by turners for making curtain-rings, and inside the shell is a kernel which has a sweet taste while fresh, but which when dried goes on getting continually harder and harder, so that it can only be eaten after being soaked in water for several days. The wood has a rather uneven grain that is most attractive, and it is consequently very much admired by the Persians. XIX. Also thorn-wood is equally esteemed in the same country, that is, the wood of a black thorn, as it lasts without decaying even in water, and is consequently extremely serviceable for the ribs of ships; timbers made of a white thorn rot easily. It has sharp thorns even on the leaves, and seed in pods that is used instead of oak-galls in dressing leather. The blossom has a pleasing effect in garlands and also makes a valuable medicine; also the tree distils gum. But its most valuable property is that when cut down it shoots up again two years later. This thorn grows in the neighbourhood of Thebes, where oak, persea and olive are also found, in a forest region nearly 40 miles from the Nile, watered by springs that rise in it. This region also contains the Egyptian plum-tree, which is not unlike the thorn last mentioned; its fruit resembles a medlar, and ripens in the winter, and the tree is an evergreen. The fruit contains a large stone, but the fleshy part, owing to its nature and to the abundance in which it grows, provides the natives with quite a harvest, as after cleaning it they crush it and make it into cakes for storage. There was also once a forest region round Memphis with such huge trees that three men could

unius peculiari miraculo, nec pomum propter usumve aliquem, sed eventum: facies est spinae, folia habet ceu pinnas quae tactis ab homine ramis cadunt protinus ac postea renascuntur.

66 XX. Cummim optimam esse ex Aegyptia spina convenit, vermiculatam, colore glauco, puram, sine cortice, dentibus adhaerentem; pretium eius in libras X III. deterior ex amygdalis amaris et ceraso,
67 pessima e prunis. fit et in vitibus infantium ulceribus aptissima, et aliquando in olea dentium dolori, ulmo etiam in Coryco monte Ciliciae ac iunipiro ad nihil utiles, ex ulmi vero cummi et culices ibi nascuntur. fit et e sarcocolla—ita vocatur et[1] arbor et cummis—utilissima pictoribus ac medicis, similis pollini turis, et ideo candida quam rufa melior; pretium eius quod supra.

68 XXI. Nondum palustria attigimus nec frutices amnium. prius tamen quam digrediamur ab Aegypto et papyri natura dicetur, cum chartae usu maxime huma-
69 nitas vitae constet, certe memoria. et hanc Alexandri Magni victoria repertam auctor est M. Varro, condita in Aegypto Alexandria; antea non fuisse chartarum

[1] et *add. Rackham.*

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[a] The Persian *Penaea sarcocolla.*

not join hands round the trunks; and one of them was particularly remarkable, not because of its fruit or its utility for some purpose, but on account of the circumstance that it has the appearance of a thorn, but leaves resembling wings, which when somebody touches the branches at once fall off and afterwards sprout again.

XX. It is agreed that the Egyptian thorn supplies the best kind of gum; it is of a streaked appearance, grey in colour, clean and free from bark, and it sticks to the teeth; its price is 3 denarii per pound. The gum produced from the bitter almond and the cherry is inferior, and that from plum-trees is the worst kind of all. A gum also forms in the vine which is extremely valuable for children's sores, and the gum sometimes found in the olive-tree is good for toothache; but the gums also found in the elm on Mount Corycus in Cilicia and in the juniper are of no use for anything, indeed elm-tree gum there even breeds gnats. Also a gum exudes from the sarcocolla [a]—that is the name of the tree and also of the gum—which is extremely useful both to painters and to medical men; it resembles incense dust, and for the purposes mentioned the white kind is better than the red; its price is the one mentioned above. *Egyptian gum.*

XXI. We have not yet touched on the marsh-plants nor the shrubs that grow by rivers. But before we leave Egypt we shall also describe the nature of papyrus, since our civilization or at all events our records depend very largely on the employment of paper. According to Marcus Varro we owe even the discovery of paper to the victory of Alexander the Great, when he founded Alexandria in Egypt, before which time paper was not used. First of all people *Papyrus: invention of paper.*

usum. in palmarum foliis primo scriptitatum, dein quarundam arborum libris, postea publica monumenta plumbeis voluminibus, mox et privata linteis confici coepta aut ceris: pugillarium enim usum fuisse etiam ante Troiana tempora invenimus apud Homerum, illo vero prodente ne terram quidem ipsam, quae nunc Aegyptus intellegitur, cum in Sebennytico et Saitico nomis[1] charta nascatur, postea
70 adaggeratam Nilo, siquidem a Pharo insula, quae nunc Alexandriae ponte iungitur, noctis dieique velifico navigii cursu terram afuisse prodidit. mox, aemulatione circa bibliothecas regum Ptolemaei et Eumenis, supprimente chartas Ptolemaeo, idem Varro membranas Pergami tradit repertas; postea promiscue patuit usus rei qua constat immortalitas hominum.

71 XXII. Papyrum ergo nascitur in palustribus Aegypti aut quiescentibus Nili aquis ubi evagatae stagnant duo cubita non excedente altitudine gurgitum, bracchiali radicis obliquae crassitudine, triangulis lateribus, decem non amplius cubitorum longitudine in gracilitatem fastigatum, thyrsi modo cacumen includens, nullo semine aut usu eius alio quam floris ad deos
72 coronandos. radicibus incolae pro ligno utuntur, nec ignis tantum gratia sed ad alia quoque utensilia vasorum; ex ipso quidem papyro navigia texunt et e

[1] *Warmington*: Saite eius nomo omnis (*fortasse recte*).

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[a] *Pergamena*, Περγαμηνή.

[b] A rod carried by worshippers of Bacchus, topped by a fir-cone or a cluster of grapes or figs.

[c] As a matter of fact it has a seed, though not easily perceptible.

used to write on palm-leaves and then on the bark of certain trees, and afterwards folding sheets of lead began to be employed for official muniments, and then also sheets of linen or tablets of wax for private documents; for we find in Homer that the use of writing-tablets existed even before the Trojan period, but when he was writing even the land itself which is now thought of as Egypt did not exist as such, while now paper grows in the Sebennytic and Saitic nomes of Egypt, the land having been subsequently heaped up by the Nile, inasmuch as Homer wrote that the island of Pharos, which is now joined to Alexandria by a bridge, was twenty-four hours' distance by sailing-ship from the land. Subsequently, also according to Varro, when owing to the rivalry between King Ptolemy and King Eumenes about their libraries Ptolemy suppressed the export of paper, parchment [a] was invented at Pergamum; and afterwards the employment of the material on which the immortality of human beings depends spread indiscriminately. *Il.* VI. 168.

Papyrus where grown.

XXII. Papyrus then grows in the swamps of Egypt or else in the sluggish waters of the Nile where they have overflowed and lie stagnant in pools not more than about three feet in depth; it has a sloping root as thick as a man's arm, and tapers gracefully up with triangular sides to a length of not more than about 15 feet, ending in a head like a thyrsus [b]; it has no seed,[c] and is of no use except that the flowers are made into wreaths for statues of the gods. The roots are employed by the natives for timber, and not only to serve as firewood but also for making various utensils and vessels; indeed the papyrus itself is plaited to make boats, and the inner bark is

libro vela tegetesque, nec non et vestem, etiam stragula ac funes. mandunt quoque crudum decoctumque, sucum tantum devorantes.

73 Nascitur et in Syria circa quem odoratus ille calamus lacum, neque aliis usus est quam inde funibus rex Antigonus in navalibus rebus, nondum sparto communicato. nuper et in Euphrate nascens circa Babylonem papyrum intellectum est eundem usum habere chartae; et tamen adhuc malunt Parthi vestibus litteras intexere.

74 XXIII. Praeparatur ex eo charta diviso acu in praetenues sed quam latissimas philyras[1]; principatus medio, atque inde scissurae ordine. prima[2] hieratica appellabatur antiquitus religiosis tantum voluminibus dicata, quae adulatione Augusti nomen accepit, sicut secunda Liviae a coniuge eius: ita
75 descendit hieratica in tertium nomen. proximum amphitheatricae[3] datum fuerat a confecturae loco. excepit hanc Romae Fanni sagax officina, tenuatamque curiosa interpolatione principalem fecit e plebeia et nomen ei dedit; quae non esset ita re-
76 curata in suo mansit amphitheatrica.[3] post hanc

[1] fibras *Birt.* [2] prima *add. Birt.*
[3] *V.ll.* amphitheatriticae, amphitheatritica.

[a] The amphitheatre of Alexandria.

woven into sail-cloth and matting, and also cloth, as well as blankets and ropes. It is also used as chewing-gum, both in the raw state and when boiled, though only the juice is swallowed.

Papyrus also grows in Syria on the borders of the lake round which grows the scented flag already xii. 104 mentioned, and King Antiochus would only allow ropes made from this Syrian papyrus to be used in his navy, the employment of esparto not yet having become general. It has recently been realized that papyrus growing in the Euphrates near Babylon can also be used in the same way for paper; nevertheless up to the present the Parthians prefer to embroider letters upon cloths.

Manufacture of paper.

XXIII. The process of making paper from papyrus is to split it with a needle into very thin strips made as broad as possible, the best quality being in the centre of the plant, and so on in the order of its splitting up. The first quality used to be called 'hieratic paper' and was in early times devoted solely to books connected with religion, but in a spirit of flattery it was given the name of Augustus, just as the second best was called 'Livia paper' after his consort, and thus the name 'hieratic' came down to the third class. The next quality had been given the name of 'amphitheatre paper,' from the place of its manufacture.[a] This paper was taken over by the clever workshop of Fannius at Rome, and its texture was made finer by a careful process of insertion, so that it was changed from common paper into one of first-class quality, and received the name of the maker; but the paper of this kind that did not have this additional treatment remained in its own class as amphitheatre paper. Next to this

Saitica ab oppido ubi maxima fertilitas, ex vilioribus ramentis, propiorque etiamnum cortici Taeneotica a vicino loco, pondere iam haec, non bonitate, venalis. nam emporitica inutilis scribendo involucris chartarum segestribusque mercium [1] usum praebet, ideo a mercatoribus cognominata. post hanc papyrum est extremumque eius scirpo simile ac ne funibus quidem nisi in umore utile.

77 Texitur omnis madente tabula Nili aqua: turbidus liquor vim glutinis praebet. in rectum primo supina tabulae schida adlinitur longitudine papyri quae potuit esse resegminibus utrimque amputatis, traversa postea crates peragit. premitur ergo prelis, et siccantur sole plagulae atque inter se iunguntur, proximarum semper bonitatis deminutione ad deterrimas. numquam plures scapo quam vicenae.

78 XXIV. Magna in latitudine earum differentia: XIII digitorum optimis, duo detrahuntur hieraticae, Fanniana denos habet, et uno minus amphitheatrica,[2] pauciores Saitica nec malleo sufficit, nam emporiticae brevitas sex digitos non excedit. praeterea spectantur in chartis tenuitas, densitas, candor, levor.
79 primatum mutavit Claudius Caesar. nimia quippe

[1] *Rackham* (merciumque segestribus? *Mayhoff*): segestriumque mercibus.

[2] *V.ll.* amphitheatriticae, amphitheatritica.

is the Saitic paper named from the town where it is produced in the greatest abundance, being made from shavings of inferior quality, and the Taeneotic, from a neighbouring place, made from material still nearer the outside skin, in the case of which we reach a variety that is sold by mere weight and not for its quality. As for what is called 'emporitic' paper, it is no good for writing but serves to provide covers for documents and wrappers for merchandise, and consequently takes its name from the Greek word for a merchant. After this comes the actual papyrus, and its outermost layer, which resembles a rush and is of no use even for making ropes except those used in water.

Paper of all kinds is 'woven' on a board moistened with water from the Nile, muddy liquid supplying the effect of glue. First an upright layer is smeared on to the table, using the full length of papyrus available after the trimmings have been cut off at both ends, and afterwards cross strips complete the lattice-work. The next step is to press it in presses, and the sheets are dried in the sun and then joined together, the next strip used always diminishing in quality down to the worst of all. There are never more than twenty sheets to a roll.

XXIV. There is a great difference in the breadth of the various kinds of paper: the best is thirteen inches wide, the hieratic two inches less, the Fannian measures ten inches and the amphitheatre paper one less, while the Saitic is still fewer inches across and is not as wide as the mallet used in making it, as the emporitic kind is so narrow that it does not exceed six inches. Other points looked at in paper are fineness, stoutness, whiteness and smoothness. The status of best quality was altered by the

Varieties of paper.

Augustae tenuitas tolerandis non sufficiebat calamis; ad hoc tramittens litteras liturae metum adferebat ex aversis, et alias indecoro visu pertralucida. igitur e secundo corio statumina facta sunt, e primo subte-
80 mina. auxit et latitudinem pedali mensura. erat et cubitalis macrocolis, sed ratio deprehendit vitium unius schidae revolsione plures infestante paginas. ob haec praelata omnibus Claudia, Augustae in epistulis auctoritas relicta; Liviana suam tenuit, cui nihil e prima erat sed omnia e secunda.

81 XXV. Scabritia levigatur dente conchave, sed caducae litterae fiunt: minus sorbet politura charta, magis splendet. rebellat saepe umor incuriose datus primo, malleoque deprehenditur, aut etiam odore cum cura[1] fuit indiligentior. deprehenditur et lentigo oculis, sed inserta mediis glutinamentis taenea fungo papyri bibula vix nisi littera fundente se: tantum inest fraudis. alius igitur iterum texendis labor.

[1] cura *add. Mayhoff.*

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[a] 'Long-limbed,' in long strips; Cicero, *ad Att.* XVI. 3. 1 and XIII. 253, and some MSS. here also give *macrocollum*, 'long-glued,' made of strips pasted together.

emperor Claudius. The reason was that the thin paper of the period of Augustus was not strong enough to stand the friction of the pen, and moreover as it let the writing show through there was a fear of a smudge being caused by what was written on the back, and the great transparency of the paper had an unattractive look in other respects. Consequently the foundation was made of leaves of second quality and the woof or cross layer of leaves of the first quality. Claudius also increased the width of the sheet, making it a foot across. There were also eighteen-inch sheets called 'macrocola,'[a] but examination detected a defect in them, as tearing off a single strip damaged several pages. On this account Claudius paper has come to be preferred to all other kinds, although the Augustus kind still holds the field for correspondence; but Livia paper, having no quality of a first-class kind, but being entirely second class, has retained its position.

XXV. Roughness is smoothed out with a piece of ivory or a shell, but this makes the lettering apt to fade, as owing to the polish so given the paper does not take the ink so well, but has a shinier surface. The damping process if carelessly applied often causes difficulty in writing at first, and it can be detected by a blow with the mallet, or even by the musty smell if the process has been rather carelessly carried out. Spottiness also may be detected by the eye, but a bad porous strip found inserted in the middle of the pasted joins, owing to the sponginess of the papyrus, sucks up the ink and so can scarcely be detected except when the ink of a letter runs: so much opportunity is there for cheating. The consequence is that another task is added to the process of paper-weaving.

Finishing process.

82 XXVI. Glutinum vulgare e pollinis flore temperatur fervente aqua, minimo aceti aspersu, nam fabrile cummisque fragilia sunt. diligentior cura mollia panis fermentati colat[1] aqua fervente; minimum hoc modo intergerivi, atque etiam lini[2] lenitas superatur. omne autem glutinum nec vetustius esse debet uno die nec recentius. postea malleo tenuatur et glutino percurritur, iterumque con-
83 stricta[3] erugatur atque extenditur malleo. ita sint longinqua monimenta: Tiberi Gaique Gracchorum manus apud Pomponium Secundum vatem civemque clarissimum vidi annos fere post ducentos; iam vero Ciceronis ac divi Augusti Vergilique saepenumero videmus.

84 XXVII. Ingentia exempla contra M. Varronis sententiam de chartis reperiuntur. namque Cassius Hemina, vetustissimus auctor annalium, quarto eorum libro prodidit Cn. Terentium scribam agrum suum in Ianiculo repastinantem effodisse arcam in
85 qua Numa qui Romae regnavit situs fuisset; in eadem libros eius repertos P. Cornelio L. filio Cethego, M. Baebio Q. filio Tamphilo cos. ad quos a regno Numae colliguntur anni DXXXV; hos fuisse e charta, maiore etiamnum miraculo, quod infossi du-

[1] *Mayhoff*: colata. [2] *V.l.* Nili.
[3] *V.l.* conscripta (concrispata *Birt*).

XXVI. The common kind of paste for paper is made of fine flour of the best quality mixed with boiling water, with a very small sprinkle of vinegar; for carpenter's paste and gum make too brittle a compound. But a more careful process is to strain the crumb of leavened bread in boiling water; this method requires the smallest amount of paste at the seams, and produces a paper softer than even linen. But all the paste used ought to be exactly a day old—not more nor yet less. Afterwards the paper is beaten thin with a mallet and run over with a layer of paste, and then again has its creases removed by pressure and is flattened out with the mallet. This process may enable records to last a long time; at the house of the poet and most distinguished citizen Pomponius Secundus I have seen documents in the hand of Tiberius and Gaius Gracchus written nearly two hundred years ago; while as for autographs of Cicero, of his late Majesty Augustus, and of Virgil, we see them constantly. *Paste for making paper.*

XXVII. There are important instances forthcoming that make against the opinion of Marcus Varro in regard to the history of paper. Cassius Hemina, a historian of great antiquity, has stated in his *Annals*, Book IV, that the secretary Gnaeus Terentius, when digging over his land on the Janiculan, turned up a coffer that had contained the body of Numa, who was king at Rome, and that in the same coffer were found some books of his—this was in the consulship of Publius 181 B.C. Cornelius Cethegus, son of Lucius, and of Marcus Baebius Tamphilus, son of Quintus, dating 535 years after the accession of Numa; and the historian says that the books were made of paper, which makes the matter still more remarkable, because of their having *History of use of paper.*

raverint—quapropter in re tanta ipsius Heminae
86 verba ponam: 'Mirabantur alii quomodo illi libri
durare possent; ille ita rationem reddebat: lapidem
fuisse quadratum circiter in media arca vinctum
candelis quoquoversus; in eo lapide insuper libros
III sitos[1] fuisse: se[2] propterea arbitrarier non
computruisse; et libros citratos fuisse: propterea
arbitrarier tineas non tetigisse. in iis libris scriptae[3]
erant philosophiae Pythagoricae—eosque combustos
a Q. Petilio praetore [quia philosophiae scripta
87 essent].[4] hoc idem tradit Piso censorius primo
commentariorum, sed libros septem iuris pontificii,
totidem Pythagoricos fuisse; Tuditanus tertio decumo
Numae decretorum libros XII[5] fuisse; ipse
Varro humanarum antiquitatum VII, Antias secundo
libros fuisse XII pontificales Latinos, totidem
Graecos praecepta philosophiae continentes; idem
88 tertio et SC.[6] ponit quo comburi eos placuerit. inter
omnes vero convenit Sibyllam ad Tarquinium Superbum
tres libros adtulisse, ex quibus sint duo
cremati ab ipsa, tertius cum Capitolio Sullanis
temporibus. praeterea Mucianus ter cos. prodidit
nuper se legisse, cum praesideret Lyciae, Sarpedonis

[1] III sitos *Mayhoff*: insitos (III sepositos *Detlefsen*).
[2] se *add. Rackham.*
[3] *Madvig*: scripta.
[4] *Secl. Rackham*: *v.l. om.* essent.
[5] libros XII *add. Gelen.*
[6] *Urlichs*: et se.

[a] The reason is probably an interpolation.

lasted in a hole in the ground, and consequently on a point of such importance I will quote the words of Hemina himself: 'Other people wondered how those books could have lasted so long, but Terentius's explanation was that about in the middle of the coffer there had been a square stone tied all round with waxed cords, and that the three books had been placed on the top of this stone; and he thought this position was the reason why they had not decayed; and that the books had been soaked in citrus-oil, and he thought that this was why they were not moth-eaten. These books contained the philosophical doctrines of Pythagoras'—and Hemina said that the books had been burnt by the praetor Quintus Petilius because they were writings of philosophy.[a] The same story is recorded by Piso the former Censor in his *Commentaries*, Book I, but he says that there were seven volumes of pontifical law and the same number of Pythagorean philosophy; while Tuditanus in Book XIII says that there were twelve volumes of the *Decrees of Numa*; Varro himself says that there were seven volumes of *Antiquities of Man*, and Antias in his Second Book speaks of there having been twelve volumes *On Matters Pontifical* written in Latin and the same number in Greek containing *Doctrines of Philosophy*; Antias also quotes in Book III a Resolution of the Senate deciding that these volumes were to be burnt. It is however universally agreed that the Sibyl brought three volumes to Tarquin the Proud, of which two were burnt by herself while the third was destroyed in the burning of the Capitol in the Sulla crisis. Moreover the Mucianus who was three times consul has stated that recently, when governor of Lycia, he

ab Troia scriptam in quodam templo epistulae chartam, quod eo magis miror si etiamnum Homero condente Aegyptus non erat: aut cur, si iam hic erat usus, in plumbeis linteisque voluminibus scriptitatum constet, curve Homerus in ipsa illa Lycia Bellerophonti codicillos datos, non epistulas,[1] tradiderit?
89 sterilitatem sentit hoc quoque, factumque iam Tiberio principe inopia chartae ut e senatu darentur arbitri dispensandae: alias in tumultu vita erat.

90 XXVIII. Aethiopia Aegypto contermina insignes arbores non fere habet praeter laniferam, qualis Indorum atque Arabiae dicta est. propior tamen huic natura lanae maiorque folliculus granati modo mali, similesque et inter se arbores ipsae. praeter hanc palmae quales retulimus. insularum arbores ambitu Aethiopiae et nemora odorata in mentione earum dicta sunt.

91 XXIX. Atlans mons peculiari proditur silva, de qua diximus. confines ei Mauri, quibus plurima arbor citri et mensarum insania quas feminae viris contra
92 margaritas regerunt. exstat hodie M. Ciceronis in illa paupertate et, quod magis mirum est, illo aevo

[1] [non epistulas]? *Rackham.*

[a] *I.e.* cotton, German 'Baumwolle' = 'tree wool.' See XII. 38 ff.

had read in a certain temple a letter of Sarpedon written on paper at Troy—which seems to me even more remarkable if even when Homer was writing, Egypt did not yet exist: otherwise why, if paper was already in use, is it known to have been the custom to write on folding tablets made of lead or sheets of linen, or why has Homer stated that even in Lycia itself wooden tablets, and not letters, were given to Bellerophon? This commodity also is liable to dearth, and as early as the principate of Tiberius a shortage of paper led to the appointment from the senate of umpires to supervise its distribution, as otherwise life was completely upset. *Il.* VI. 168.

Ethiopian cotton.

XXVIII. Ethiopia, which is on the borders of Egypt, has virtually no remarkable trees except the wool-tree,[a] like the one described among the trees of India and Arabia. However, the Ethiopian variety has a much woollier consistency, and a larger pod, like that of a pomegranate, and also the trees themselves resemble each other. Beside the wool-tree there are also palms of the kind which we have described. The trees and the scented forests of the islands round the coast of Ethiopia have been spoken of when those islands were mentioned. XII. 38 ff. §§ 28 ff. VI. 198 f.

Citrus-wood for tables.

XXIX. Mount Atlas is said to possess a forest of a remarkable character, about which we have spoken. Adjoining Mount Atlas is Mauretania, which produces a great many citrus-trees—and the table-mania which the ladies use as a retort to the men against the charge of extravagance in pearls. There still exists a table that belonged to Marcus Cicero for which with his slender resources and, what is more surprising, at that date, he paid half-a-million sesterces;

empta HS $\overline{\text{D}}$; memoratur et Galli Asini HS $|\overline{\text{X}}|$. venumdatae sunt et duae ab Iuba rege pendentes quarum alteri pretium fuit HS $|\overline{\text{XII}}|$, alteri paulo minus. interiit nuper incendio a Cethegis descendens HS $|\overline{\text{XIII}}|$ permutata, latifundii taxatione, si quis
93 praedia tanti mercari malit. magnitudo amplissimis adhuc fuit: uni commissae ex orbibus dimidiatis duobus a rege Mauretaniae Ptolemaeo quattuor pedes et semipedem per medium ambitum, crassitudine quadrantali—maiusque miraculum in ea est artis latente iunctura quam potuisset esse naturae—solidae autem [1] a Nomio Caesaris liberto cognomen trahenti tribus sicilicis infra quattuor pedes totidem-
94 que infra pedem crassitudinis. qua in re non omittendum videtur Tiberio principi mensam quattuor pedes sextante et sicilico excedentem, tota vero crassitudine sescunciali, operimento lamnae vestitam fuisse, cum tam opima Nomio liberto eius esset.
95 tuber hoc est radicis, maximeque laudatum quod sub terra totum fuerit et rarius quam quae superne gignuntur etiam in ramis; proprieque quod tanti emitur arborum vitium est, quarum amplitudo ac radices aestimari possunt ex orbibus. sunt autem cupresso feminae atque etiamnum silvestri similes folio, odore, caudice. Ancorarius mons vocatur Citerioris Mauretaniae qui laudatissimam dedit citrum, iam exhaustus.

[1] item *Gelen.*

and also one is recorded as belonging to Gallus Asinius that cost a million. Also two hanging tables were sold at auction by King Juba, of which one fetched 1,200,000 sesterces and the other a little less. A table that was lately destroyed in a fire came down from the Cethegi and had changed hands at 1,300,000 sesterces—the price of a large estate, supposing somebody preferred to devote so large a sum to the purchase of landed property. The size of the largest tables hitherto has been: one made by Ptolemy, king of Mauretania, out of two semicircular slabs of wood joined together, $4\frac{1}{2}$ ft. in diameter and 3 in. thick —and the invisibility of the join makes the table more marvellous as a work of art than it could possibly have been if a product of nature—and a single slab bearing the name of Nomius a freedman of the Emperor which is 3 ft. $11\frac{1}{4}$ in. across and $11\frac{1}{4}$ in. thick. Under this head it seems proper to include a table that belonged to the Emperor Tiberius which was 4 ft. $2\frac{1}{4}$ in. across, and $1\frac{1}{2}$ in. thick all over, but was only covered with a veneer of citrus-wood, although the one belonging to his freedman Nomius was so sumptuous. The material is an excrescence of the root, and is very greatly admired when it grows entirely underground, and so is more uncommon than the knobs that grow above ground, on the branches as well as on the trunk; and the timber bought at so high a price is in reality a disease of the trees, the size and the roots of which can be judged from the circular tabletops. In foliage, scent and the appearance of the trunk these trees resemble the female cypress, which is also a forest tree. A mountain called Ancorarius in Hither Mauretania provided the most celebrated citrus-wood, but the supply is now exhausted.

96 XXX. Mensis praecipua dos in venam crispis vel in vertices parvos. illud oblongo evenit discursu ideoque tigrinum appellatur, hoc intorto, et ideo tales pantherinae vocantur. sunt et undatim crispae, maiore gratia
97 si pavonum caudae oculos imitentur. magna, verum post has, gratia extra praedictas crispis densa veluti grani congerie, quas ob id a similitudine apiatas vocant. summa vero omnium in colore: hic maxime mulsi placet, vinis suis refulgens. post haec amplitudo est: iam toti caudices iuvant, pluresque in una.
98 Mensae vitia lignum—ita vocatur materiae surda et indigesta simplicitas aut platani foliorum modo digesta, item ilignae venae similitudo vel coloris—et, quibus maxime obnoxias fecere aestus ventique, rimae aut capillamenta rimas imitata; postea murenae[1] nigro transcurrens limite variisque cornicum[2] punctis adprehensus papaverum modo[3] et in totum atro
99 propior colos maculaeve discolores. virides terra condunt barbari et inlinunt cera, artifices vero frumenti acervis inponunt septenis diebus totidem intermissis, mirumque ponderi quantum ita detrahatur.

[1] *Warmington*: murena.
[2] *Hardouin*: corticum *aut* coruum.
[3] *V.l.* nodo.

[a] Cf. below, § 99 fin.

XXX. The outstanding merit of citrus-wood tables is to have wavy marks forming a vein or else little spirals. The former marking produces a longish pattern and is consequently called tiger-wood, while the latter gives a twisted pattern and consequently slabs of that sort are called panther-tables. Also some have wavy crinkled markings, which are more esteemed if they resemble the eyes in a peacock's tail. Besides the kinds previously mentioned, great esteem, though coming after these, belongs to those veined with a thick cluster of what look like grains, these slabs being consequently called parsley-wood, from the resemblance. But the highest value of all resides in the colour of the wood, the colour of meed being the most favoured, shining with the wine that is proper to it.[a] The next point is size: now-a-days tables made of whole trunks are admired, or several trunks morticed together in one table.

The faults in a table are woodiness—that is the name given to a dull patternless uniformity in the timber, or uniformity arranged like the leaves of a plane-tree, and also to a grain resembling the veining or colouring of the holm-oak—and to flaws or hairy lines resembling flaws, a fault to which heat and wind have rendered the timber particularly liable; next comes a colour running across the wood in a black streak like a lamprey and marked with irregular raven-scratchings as on a poppy and in general rather approaching black, or blotches of various colours. The natives bury the timber in the ground while still green, giving it a coat of wax; but carpenters lay it in heaps of corn for periods of a week with intervals of a week between, and it is surprising how much its weight is reduced by this process.

naufragia docuere nuper hanc quoque materiam siccatam mari duritie incorrupta cospissari non ullo modo vehementius. nutriuntur optume splendescuntque manus siccae fricatu a balineis maxime; nec vinis laeduntur ut iis genitae.

100 Inter pauca nitidioris vitae instrumenta haec arbor est, quapropter insistendum ei quoque paululum videtur. nota etiam Homero fuit; thyon Graece vocatur, ab aliis thya. hanc itaque inter odores uri tradidit in deliciis Circae, quam deam volebat intellegi, magno errore eorum qui odoramenta in eo vocabulo accipiunt, cum praesertim eodem versu cedrum laricemque una tradat uri, quo manifestum
101 est de arboribus tantum locutum. Theophrastus, qui proximus a Magni Alexandri aetate scripsit circa[1] urbis Romae annum ccccxxxx, magnum iam huic arbori honorem tribuit, memoratas ex ea referens templorum veterum contignationes quandamque immortalitatem materiae in tectis contra vitia
102 omnia incorruptae; radice nihil crispius, nec aliunde pretiosiora opera; praecipuam autem esse eam arborem circa Hammonis delubrum, nasci et in interiore Cyrenaicae parte. de mensis tamen tacuit, et alias

[1] *Rackham*: haec circa.

[a] *Od.* V. 60. [b] *Hist. Plant.* V. 3, 7.

Also wreckage from ships has recently shown that this timber is dried by the action of sea water, and solidified with a hardness that resists decay, no other method producing this result more powerfully. Citrus-wood tables are best kept and polished by rubbing with the dry hand, especially just after a bath; and they are not damaged by spilt wine, as having been created for the purpose of wine-tables.

The citrus-tree.

Few things that supply the apparatus of a more luxurious life rank with this tree, and consequently it seems desirable to dwell on it for a little as well. It was known even to Homer—the Greek name for it being *thyon*, otherwise *thya*. Well, Homer [a] has recorded its being burnt among unguents as one of the luxuries of Circe, whom he meant to be understood as a goddess—those who take the word *thyon* to mean perfumes being greatly in error, especially as in the same verse he says that cedar and larch were burnt at the same time, which shows that he was only speaking of trees. Already Theophrastus,[b] who wrote immediately after the period of Alexander the Great, about 314 B.C., assigns a high rank to this tree, stating that it was recorded that the flooring of the old temples used to be made of it and that its timber when used in roofed buildings is virtually everlasting, being proof against all causes of decay; and he says that no wood is more marked with veins than the root, and that no products made of any other material are more valuable. The finest citrus, he says, is round the Temple of Hammon, but it also grows in the interior of Cyrenaica. He makes no mention, however, of tables made of citrus-wood, and indeed there is no

nullius ante Ciceronianam vetustior memoria est, quo noviciae apparent.

103 XXXI. Alia est arbor eodem nomine, malum ferens execratum aliquis odore et amaritudine, aliis expetitum, domus etiam decorans, nec dicenda verbosius.

104 XXXII. Eadem Africa, qua vergit ad nos, insignem arborem loton gignit, quam vocat celthim, et ipsam Italiae familiarem sed terra mutatam. praecipua est circa Syrtes atque Nasamonas. magnitudo quae piro, quamquam Nepos Cornelius brevem tradit. incisurae folio crebriores, alioqui ilicis viderentur. differentiae plures, eaeque maxime fructibus fiunt.
105 magnitudo huic fabae, color croci, sed ante maturitatem alius atque alius, sicut uvis. nascitur densus in ramis myrti modo, non ut in Italia cerasi,[1] tam dulcis ibi cibo ut nomen etiam genti terraeque dederit nimis hospitali advenarum oblivione patriae. ferunt ventris non sentire morbos qui eum mandant.
106 melior sine interiore nucleo, qui de altero genere osseus videtur. vinum quoque exprimitur illi simile mulso, quod ultra denos dies negat durare idem Nepos, bacasque concisas cum alica ad cibos doliis condi. quin et exercitus pastos eo accipimus ultro

[1] *Edd.*: cerasis *aut* cerasus.

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[a] The Lotophagi, see V. 41.

older record of one before that of the time of Cicero, which proves their novelty.

The citron. XXXI. There is another tree with the same name, bearing fruit which some people abhor for its scent and bitter taste while other people are fond of it; this wood is also used for decorating houses, but it does not need further description.

The African lotus-tree, producing fruit and wine. XXXII. Africa also, where it faces in our direction, produces a remarkable tree, the lotus, called in the vernacular *celthis*, which also has been naturalized in Italy, though it has been altered by the change of soil. The finest lotus is found round the Syrtes and the district of the Nasamones. It is the size of a pear, although Cornelius Nepos states that it is a short fruit. *Fr. 20 Halm.* The incisions in the leaf resemble those in the holm-oak, except that they are more numerous. There are several varieties of lotus, differing chiefly in their fruits. This one is the size of a bean and saffron-coloured, but it changes colour several times before it is ripe, like grapes. It grows in thick clusters on the branches like myrtle-berries and not like cherries as it does in Italy; in its own country it is so sweet to eat that it has even given its name to a race of people [a] and to a land which is too hospitable to strangers who come there, making them forget their native land. It is reported that chewing this lotus prevents gastric diseases. The better kind has no stone inside it, those of the other variety having a kernel of a bony appearance. Also a wine is pressed from this fruit that resembles mead, which again according to Nepos will not keep for more than ten days; he states that the berries are chopped up with wheat and stored in casks for food. Indeed we are told that armies have been fed on this while

citroque commeantes per Africam. ligno colos niger: ad tibiarum cantus expetitur; e radice cultellis capulos brevesque alios usus excogitant.

107 Haec ibi natura arboris. est autem eodem nomine et herba et in Aegypto caulis in palustrium genere. recedentibus enim aquis Nili riguis provenit similis fabae caule foliisque densa congerie stipatis, brevioribus tantum gracilioribusque. fructus in capite papaveri similis incisuris omnique alio modo, intus
108 grana ceu milium. incolae capita in acervis putrefaciunt, mox separant lavando et siccata tundunt eoque pane utuntur. mirum est quod praeter haec traditur, sole occidente papavera ea conprimi et integi foliis, ad ortum autem aperiri, donec ma-
109 turescant flosque qui est candidus decidat. hoc amplius in Euphrate tradunt et caput ipsum et florem vespera mergi usque in medias noctes, totumque abire in altum, ut ne demissa quidem manu possit inveniri, reverti deinde paulatimque subrigi, et ad exortus solis emergere extra aquam ac florem patefacere, atque etiamnum insurgere, ut plane ab
110 aqua absit alte. radicem lotos habet mali cotonei magnitudine, opertam nigro cortice, qualis et castaneas tegit; interius candidum corpus, gratum cibis

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[a] The Egyptian water-lily.

marching to and fro through Africa. The wood is of a black colour, and is in demand for making melodious flutes, while out of the root are devised knife-handles and other short implements.

Kindred varieties. This is the nature of the lotus-tree in Africa. But the same name also belongs to a herbaceous plant, as well as to a colewort[a] in Egypt belonging to the class of marsh-plants. This springs up when the flood waters of the Nile retire; it resembles a bean in its stalk and in its leaves, which grow in large, thick clusters, although they are shorter and more slender than the leaves of a bean. The fruit grows on the head of the plant and resembles the fruit of the poppy in its indentations and in every other way; it contains grains like millet-seeds. The natives pile these heads in heaps to rot, and then separate the seeds by washing and dry them and crush them, and use them to make bread. There is a further remarkable fact reported, that when the sun sets these poppies shut up and fold their leaves round them, and at sunrise open again, this going on till they ripen and the flower, which is white, falls off. A further point reported is that in the Euphrates both the head itself and the flower at the evening go on submerging till midnight, and disappear entirely into the depth so that they cannot be found even by plunging the hand in, and then return and by degrees straighten up again, and at sunrise come out of the water and open their flower, and still go on rising so that the flower is raised up quite a long way above the water. The lotus has a root of the size of a quince, enclosed in a black skin like the shell of a chestnut; inside it has a white body, agreeable to eat raw but still more agreeable when boiled

crudum sed gratius decoctum sive aqua sive pruna. neque aliunde magis quam purgamentis eius sues crassescunt.

111 XXXIII. Cyrenaica regio loton suae postponit paliuro. fruticosior haec fructuque magis rubens, cuius nucleus non simul mandatur, iucundus per se ac suavior e vino, quin et vina suco suo commendans. interior Africa ad Garamantas usque et deserta palmarum magnitudine et suavitate constat,[1] nobilibus [2] maxime
112 circa delubrum Hammonis; XXXIV. sed circa Carthaginem Punicum malum cognomine sibi vindicat: aliqui granatum appellant; divisit et in genera apyrenum vocando cui lignosus nucleus abesset: candidior ei natura et blandiores acini minusque amaris distincti membranis; alias structura eorum quaedam ut in
113 favis, communis nucleos habentium. horum quinque species: dulcia, acria, mixta, acida, vinosa; Samia et Aegyptia distinguntur erythrocomis et leucocomis. corticis maior usus ex acerbis ad perficienda coria. flos balaustium vocatur, et medicis idoneus et tinguendis vestibus, quarum color inde nomen accepit.

114 XXXV. In Asia et Graecia nascuntur frutices: epicactis, quem alii embolinen vocant, parvis foliis quae pota contra venena prosunt sicut erices contra

[1] praestat *Dalec.*
[2] nobilium? *Mayhoff.*

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[a] Ἀπύρηνον, 'without kernel.'
Puniceus, 'purple.'

in water or roasted in the ashes. Its peelings are more useful than any other fodder for fattening pigs.

XXXIII. The region of the Cyrenaica ranks the lotus below its own Christ's-thorn. This is more in the nature of a shrub, and its fruit is redder, and contains a kernel that is eaten by itself, as it is agreeable alone; it is improved by being dipped in wine, and moreover its juice improves wine. The interior of Africa as far as the Garamantes and the desert is covered with palms remarkable for their size and their luscious fruit, the most celebrated being in the neighbourhood of the temple of Ammon. XXXIV. But the country in the neighbourhood of Carthage claims by the name of Punic apple what some call the pomegranate; this it has also split up into classes, by giving the name of apyrenum [a] to the variety that lacks a woody kernel: the consistency of this is whiter than that of the others, and its pips have a more agreeable taste and the membranes enclosing them are not so bitter; but in other respects these apples have a special structure resembling the cells in a honeycomb, which is common to all that have a kernel. Of these there are five kinds, the sweet, the sour, the mixed, the acid and the vinous; those of Samos and of Egypt are divided into the red-leaved and the white-leaved varieties. The skin of the unripe fruit is specially used for dressing leather. The flower is called balaustium, and is serviceable for doctors and also for dyeing cloth; it has given its name to a special colour.[b]

Christ's-thorn, palm, pomegranate.

XXXV. Shrubs growing in Asia and Greece are the epicactis, which others call emboline, with small leaves which taken in drink are an antidote against poisons, as those of the heath are against snakes, and the

Other shrubs and thorns.

serpentes; et in[1] quo nascitur granum Cnidium, quod aliqui linum vocant, fruticem vero thymelaean, alii chamelaean, alii pyros achnen, aliqui cnestorem, alii cneorum. est similis oleastro, folis angustioribus, cumminosis si mordeantur, myrti magnitudine; semen colore et specie farris, ad medicinae tantum usum.

115 XXXVI. Tragion fruticem sola Creta insula gignit, terebintho similem et semine, quod contra sagittarum ictus efficacissimum tradunt. eadem et tragacanthum spinae albae radice, multum praelatam apud Medos aut in Achaia nascenti; pretium eius in libras ✕ III.

116 XXXVII. Tragon et Asia fert sive scorpionem, veprem sine foliis, ramis rubentibus, ad medicinae usum, myricen et Italia, quam tamaricen vocat, Achaia autem bryan silvestrem; insigne in ea quod sativa tantum fert gallae similem fructum. in Syria et Aegypto copiosa haec est, cuius infelicia ligna appellamus.
117 quaedam[2] tamen infeliciora sunt Graeciae; gignit enim arborem ostryn, quam et ostryam vocant, solitariam circa saxa aquosa, similem fraxino cortice et ramis, folio piris, paulo tamen longioribus crassioribusque ac rugosis incisuris quae per tota discurrunt, semine hordeo simili et colore. materies est dura atque firma, qua in domum inlata difficiles partus fieri

[1] et ⟨is⟩ in? *Mayhoff.*
[2] *Ian* (qua *Sillig*): quae.

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[a] *Astragalus tragacanthas.*

shrub that produces the grain of Cnidus, which some call flax, the name of the shrub itself being thymelaea, which others call chamelaea, others pyros achne, some cnestor, others cneorum. It resembles the oleaster, but has narrower leaves, which when chewed have a gummy consistency; it is the size of a myrtle, and has a seed of the colour and shape of emmer, which is only used for medicinal purposes.

XXXVI. The goat-shrub only grows in the island of Crete; it resembles the terebinth in seed as well as in other respects; the seed is reported to be very efficacious against arrow wounds. The same island also produces a goat-thorn,[a] which has the root of the white thorn, and is much preferred to the goat-thorn growing in the country of the Medes or in Achaia; its price is 3 denarii per pound.

XXXVII. Asia also produces the goat-plant or scorpio, a thorn without leaves and with reddish branches, used for medicinal purposes: Italy also has the myrica, which is there called the tamarisk, and Achaia the wild brya; a remarkable property of the brya is that only the cultivated kind bears fruit; this resembles a gall-nut. In Syria and Egypt this shrub is abundant, and we give the name of 'unlucky wood' to its timber; yet some of the timbers of Greece are unluckier, for Greece grows a tree named the ostrys, another form of the name being ostrya, which grows by itself round rocks washed by water; it is like an ash in its bark and branches, and a pear in its leaf, though the leaves are a little longer and thicker and wrinkled with indentations running all across them; the seed resembles barley in colour as well as shape. The wood is hard and solid, and it is said that if it is brought into a house it causes difficulty in child-birth

118 produnt mortesque miseras. XXXVIII. Nec auspicatior in Lesbo insula arbor quae vocatur euonymos, non absimilis Punicae arbori—inter eam et laurum folia[1] magnitudine, figura vero et mollitia Punicae,—floris[2] candidi odore[3] statim pestem denuntians. fert siliquas sesames; intus granum quadriangula figura, spissum, letale animalibus, nec non et folio eadem vis. succurrit aliquando praeceps alvi exinanitio.

119 XXXIX. Alexander Cornelius arborem leonem appellavit ex qua facta esset Argo, similem robori viscum ferentem,[4] quae neque aqua neque igni posset corrumpi, sicuti nec viscum, nulli alii cognitam, quod equidem sciam.

120 XL. Andrachlen omnes fere Graecis[5] porcillacae nomine interpretantur, cum sit herba et andrachne vocetur unius litterae diversitate: cetero andrachle est silvestris arbor, neque in planis nascens, similis unedoni, folio tantum minore et numquam decidente, cortice non scabro quidem sed qui circumgelatus videri possit, tam tristis aspectus est.

XLI. Similis et coccygia folio, magnitudine minor.
121 proprietatem habet fructum amiciendi[6] lanugine—pappum vocant—quod nulli alii arbori evenit. similis et apharce, bifera aeque quam andrachle;

[1] *V.l.* folii. [2] *V.l.* flore.
[3] *Mueller*: candidiore.
[4] ferentem? *Mueller*: ferenti *aut* ferens.
[5] *V.ll.* Graeci, Graece, Graeciae.
[6] *Harrison*: amittendi.

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[a] 'Lucky-name,' a euphemism for an unlucky tree, like 'Euxine' ('hospitable') for the specially dangerous Black Sea.

[b] Pliny seems to have misunderstood the word *φόνος* which he found in Theophrastus, where it really denoted the blood-red colour of the juice.

[c] Perhaps the *Phyllirea angustifolia* of Linnaeus.

and painful deaths. XXXVIII. Equally unlucky is the tree on the island of Lesbos called the euonymus,[a] which is not unlike the pomegranate tree—its leaves are between pomegranate and bay-leaves in size, but have the shape and soft texture of the leaf of the pomegranate—and which by the scent of its white blossom gives prompt warning of its pestilential qualities.[b] It bears a pod like that of the sesame, with a coarse square-shaped grain inside it which is deadly for animals; and the leaf also has the same property, although sometimes an immediate evacuation of the bowels gives relief.

XXXIX. Alexander Cornelius mentions a tree called the lion-tree, the timber of which he says was used to build the Argo, which bears mistletoe resembling that on the oak, and which cannot be rotted by water or destroyed by fire, the same being the case with its mistletoe. This tree is, so far as I am aware, unknown to anyone else.

XL. 'Andrachle' is almost always rendered into Latin for the Greeks by the word 'purslain,' although purslain is a herbaceous plant and its Greek name is one letter different, andrachne: for the rest the andrachle is a forest tree, nor does it grow in level country. It resembles the arbutus, only it has a smaller leaf and is an evergreen; the bark, though not rough, might be supposed to have frozen round the tree, it has such a wretched appearance.

XLI. The sumach has a similar leaf, but is smaller in size. It has the peculiarity of clothing its fruit (which is called pappus) with downy fluff, a thing that occurs with no other tree. The apharce[c] also resembles the andrachle, and like it bears twice a

priorem fructum incipiente pubescere uva peragunt, alterum initio hiemis, quales eos non traditur.

122 XLII. Et ferulam inter externas dixisse conveniat arborumque generi adscripsisse, quoniam quarundam naturae, sicuti distinguemus, lignum omne corticis loco habent forinsecus, ligni autem loco fungosam intus medullam ut sabuci, quaedam vero inanitatem
123 ut harundines. ferula calidis nascitur locis atque trans maria, geniculatis nodata scapis. duo eius genera: nartheca Graeci vocant adsurgentem in altitudinem, nartheciam vero semper humilem. a genibus exeunt folia maxima ut quaeque terrae proxima; cetera natura eadem quae aneto, et fructu simili. nulli fruticum levitas maior; ob id gestatu facilis baculorum usum senectuti praebet.

124 XLIII. Semen ferulae thapsian quidam vocavere, decepti ei, quoniam ferula sine dubio est thapsia, sed[1] sui generis, folis feniculi, inani caule nec excedente baculi longitudinem; semen quale ferulae, radix candida. incisa lacte manat et contusa suco; nec corticem abdicant. omnia ea venena; quippe etiam fodientibus nocet si minima aspiret aura: intume-

[1] *V.l. om.* sed.

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[a] *Ferula communis.*

[b] Pliny ignores the scholastic use of this shrub (it is not really a tree) attested by Horace, Juvenal and Martial; in this connexion the name *ferula* survived in English grammar schools and colleges as long as Latin remained their official language.

[c] Viz. *Thapsia garganica.*

[d] According to Dioscorides it was valued as a purge.

year; they produce a first crop of fruit just at the time when the grapes are beginning to ripen, and a second at the beginning of winter. What sort of fruit is produced on these two occasions is not reported.

The ferula and allied shrubs.

XLII. It may be suitable to have the fennel giant mentioned among the exotics and assigned to the genus 'tree,' inasmuch as the structure of some plants, in the classification that we shall adopt, has the whole of the wood outside in place of bark and inside, in place of wood, a fungous pith like that of the elder, though some have an empty hollow inside like reeds. This fennel grows in hot countries over sea; its stalk is divided by knotted joints. It has two varieties,[a] one called in Greek narthex, which rises to some height, the other narthecia, which always grows low. From the joints shoot out very large leaves, the larger the nearer to the ground; but in other respects it has the same nature as the dill, and the fruit is similar. No shrub supplies a wood of lighter weight, and consequently it is easy to carry, and supplies walking-sticks to be used by old gentlemen.[b]

XLIII. The seed of the fennel giant has been called by some thapsia, but these people are mistaken, since the thapsia,[c] though no doubt it is a giant fennel, is one of a peculiar kind, having the leaves of a fennel and a hollow stalk not exceeding the length of a walking-stick; the seed is like that of the giant fennel, but the root is white. When an incision is made in the thapsia milk oozes out, and when pounded it emits a sweet juice; even the bark is not thrown away.[d] All these parts of the tree are poisons; in fact it is injurious even to those engaged in digging it up if the slightest current of air blows from the

scunt corpora faciemque invadunt ignes sacri; ob
125 id cerato prius inlinunt. quibusdam tamen morbis
auxiliari dicunt medici permixtam aliis, item alopeciis
suggillatisque ac liventibus, ceu vero remedia desint,
ut scelera nova[1] tractent. sed ista praetexunt noxio
instrumento, tantumque inpudentiae est ut venenum
artis esse persuadeant.

Thapsia in Africa vehementissima. quidam cau-
lem incidunt per messes et in ipsa excavant radice quo
126 sucus confluat, arefactumque tollunt; alii folia, caulem,
radicem tundunt in pila et sucum in sole coactum
dividunt in pastillos. Nero Caesar claritatem ei
dedit initio imperii, nocturnis grassationibus conver-
berata facie inlinens id cum ture ceraque, et secuto
die contra famam cutem sinceram circumferens.
ignem ferulis optime servari certum est easque in
Aegypto praecellere.

127 XLIV. Ubi et cappari, firmioris ligni frutex,
seminisque et cibis vulgati, caule quoque una ple-
rumque decerpto. cavenda eius genera peregrina,
siquidem Arabium pestilens, Africum gingivis ini-

[1] nova? *Mayhoff*: non.

shrub in their direction: their bodies swell up, and their face is attacked by erysipelas—for which reason before beginning they grease it with a solution of wax. The doctors however say that mixed with other ingredients the shrub is of use in treating certain diseases, and also for fox-mange, bruises and spottiness—as if there really were any lack of remedies, forcing them to take in hand new enormities! But they cloak their noisome expedient with excuses of that sort, and such is their impudence that they ask us to believe that poison is among the resources of science!

The thapsia of Africa is the most violent of all. Some people make an incision in the stalk during harvest-time and make a hollow in the root itself for the juice to collect in, and when it has dried take it away; others pound the leaves and stalk and root in a mortar and after drying the juice hard in the sun cut it up into lozenges. The emperor Nero at the beginning of his reign gave this juice a famous advertisement, as when during his nocturnal escapades his face had sustained a number of bruises he smeared it with a mixture of thapsia, frankincense and wax and on the following day gave the lie to rumour by going about with a whole skin. It is a well-known fact that fire can be best kept alight in a fennel stalk, and that the fennels in Egypt are the best.

XLIV. In Egypt also grows the caper-tree, a *Other shrubs.* shrub with a rather hard wood; also its seed is well known as an article of food, and is usually gathered together with the stalk. Its foreign varieties should be avoided. inasmuch as the Arabian kind is poisonous and the African injures the gums, and that from

micum, Marmaricum volvis, et omnium[1] inflationibus Apulum vomitus facit, stomachum et alvum solvit. quidam id cynosbaton vocant, alii ophiostaphylen.

128 XLV. Frutectosi est generis et saripha circa Nilum nascens, duorum ferme cubitorum altitudine, pollicari crassitudine, coma papyri, similique manditur modo, radice ferrariis officinis praecipua carbonis usu propter duritiam.

129 XLVI. Non omittendum est et quod Babylone seritur in spinis, quoniam non aliubi vivit, sicut et viscum in arboribus, sed illud in spina tantum quae regia vocatur. mirum quod eodem die germinat quo iniectum est—inicitur autem ipso canis ortu—et celerrime arborem occupat. condiunt eo vina, et ideo serunt. spina illa nascitur et Athenis in longis muris.

130 XLVII. Frutex est et cytisus ab Amphilocho Atheniense miris laudibus praedicatus pabulo omnium, aridus vero etiam suum, spondetque iugero eius annua HS. MM vel mediocri solo reditus. utilitas quae ervo, sed ocior satias, perquam modico pinguescente quadripede, ita ut iumenta hordeum spernant. non ex alio pabulo lactis maior copia aut melior, super omnia pecudum medicina ea[2] validas[3] a morbis

[1] *V.l.* omnibus. [2] ea *add.* ? *Mayhoff.*
[3] *Mayhoff*: valida.

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[a] A district of Egypt.
[b] A species of dodder, which is parasitic on other plants.
[c] Species of *Medicago*, especially *M. arborea.*

Marmarica,[a] is injurious to the womb. Also the Apulian caper-tree produces vomiting and diarrhoea by causing flatulence in all the organs. Some persons call this shrub 'dog-brier,' others 'snake-vine.'

XLV. The saripha growing on the banks of the Nile also belongs to the shrub class. It is about 3 ft. high and the thickness of a man's thumb; its foliage is that of the papyrus, and it is chewed in a similar manner. The root is highly rated in workshops for use as fuel, because of its hardness. § 72.

XLVI. Also we must not leave out a plant[b] that at Babylon is grown on thorn-bushes, because it will not live anywhere else—just as mistletoe grows on trees, but the plant in question will only grow on what is called the 'royal thorn.' It is a remarkable fact that it buds on the same day as it has been planted—this is done just at the rising of the Dogstar—and it very quickly takes possession of the whole of the tree. It is used in making spiced wine, and is cultivated for that purpose. This thorn also grows on the Long Walls at Athens.

XLVII. There is also a shrub called cytisus,[c] which has been remarkably praised by Amphilochus of Athens as a fodder for all kinds of cattle, and when dried for swine as well, and he guarantees a yearly return of 2,000 sesterces for an iugerum of it, even on only moderate soil. It serves the same purpose as vetch, but produces satiety more quickly, an animal being fattened by quite a moderate amount—so much so that beasts of burden fed on it refuse barley. No other fodder produces a larger quantity or a better quality of milk, and above everything as a medicine for cattle it renders them immune from *The cytisus.*

131 omnibus praestante. quin et nutricibus in defectu lactis aridum atque in aqua decoctum potui cum vino dari iubet, firmiores celsioresque infantes fore; viridem etiam gallinis, aut si inaruerit, madefactum. apes quoque numquam defore cytisi pabulo contingente promittunt Democritus atque Aristo-
132 machus. nec aliud minoris impendi est. seritur cum hordeum aut vere semine ut porrum, vel caule autumno ante brumam, si semine, madidum aut, si desint imbres, satum aqua [1] spargitur. plantae cubitales transferuntur scrobe pedali. seritur per aequinoctia tenero frutice, perficitur triennio, demetitur verno aequinoctio, cum florere desiit, vel
133 pueri anusve vilissima opera. canus aspectu, breviterque si quis exprimere similitudinem velit, angustioris trifoli frutex. datur animalibus post biduum semper, hieme vero quod inaruit madidum. satiant equos denae librae et ad portionem minora animalia. obiterque inter ordines alium ac [2] cepas seri fertile est.

134 Inventus est hic frutex in Cythno insula, inde tralatus in omnes Cycladas, mox in urbes Graeces, magno casei proventu. praeterea, quo maxime miror rarum esse in Italia, non aestuum, non frigorum,

[1] aqua *add.?* *Mayhoff.*
[2] ac *add.* *Warmington.*

all diseases. He also recommends a potion made of cytisus dried and boiled in water to be given with wine to nursing women when their milk fails, and he says this will make the infants stronger and taller; also he advises giving it while in the green state to fowls, or if it has dried, after being steeped. Moreover, Democritus and Aristomachus promise that bees will never fail if there is cytisus available for them to feed on. No other fodder is less expensive. It is sown when barley is, or in the spring, like leek, if the seed is used; or else the stalk is planted in autumn before the winter solstice. If sown the seed is soaked, or, if there is a shortage of rain, it is watered after sowing. When the plants are 18 inches high they are replanted in a trench a foot deep. This planting is done through the equinoxes, while the shrub is still tender; it takes three years to mature, and it is cut at the spring equinox, when it has done flowering—a job that can be done very cheaply even by a boy or an old woman. It is of a whitish colour to look at, and its appearance may be briefly described by saying that it looks like a trifoliated plant with a rather narrow leaf. It is always fed to stock only once in two days, but in winter as it has got dry it is moistened first; ten pounds make a sufficient feed for a horse, and for smaller animals in proportion. Incidentally, good results are got by sowing garlic and onions as catch-crops between the rows of cytisus.

The cytisus shrub was discovered in the island of Cythnus, and from there was transplanted to all the Cyclades and later to the Greek cities, greatly increasing the supply of cheese. Moreover—a fact that makes me very much surprised that it is rare in Italy—

non grandinum aut nivis iniuriam expavescit; adicit Hyginus, ne cossium[1] quidem, propter nullam gratiam ligni.

135 XLVIII. Nascuntur etiam in mari frutices arboresque, minores in nostro, Rubrum enim et totus orientis oceanus refertus est silvis. non habet lingua Latia[2] nomen quod Graeci vocant phycos, quoniam alga herbarum maris vocabulum intellegitur, hic autem est frutex. folio lato, colore viridi, gignit quod
136 quidam prason vocant, alii zostera. alterum genus eiusdem capillacio folio, simile feniculo, in saxis nascitur, superius in vadis haut procul litore, utrumque verno, et interit autumno. circa Cretam insulam nato in petris purpuras quoque inficiunt, laudatissimo a parte aquilonis ut spongeis. tertium est gramini simile, radice geniculata et caule qualiter calami.

137 XLIX. Aliud genus fruticum bryon vocatur, folio lactucae, rugosiore tantum, iam hoc inferius[3] nascens, in alto vero abies et quercus cubitali altitudine; ramis earum adhaerent conchae. quercu et tingui lanas tradunt, glandem etiam quasdam ferre in alto nau-
138 fragis haec deprehensa urinantibusque. et aliae traduntur praegrandes circa Sicyonem, vitis enim

[1] *Mayhoff* (*cf.* XVII 220): ne hostium.
[2] *Mayhoff*: alia.
[3] *Urlichs*: interius.

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[a] Mangroves. [b] Seaweed.
[c] Sea-laver.

it is not afraid of damage from heat and cold and hail and snow, and, as Hyginus adds, not even from wood-grubs, as its wood has no attraction for them.

XLVIII. Shrubs and trees also grow at the bottom of the sea—those in the Mediterranean being of smaller size, for the Red Sea and the whole of the Eastern Ocean are filled with forests.[a] The Latin language has no name for what the Greeks call phycos,[b] as our word alga denotes a herbaceous sea-plant, whereas the phycos is a shrub. It has a broad leaf and is coloured green; and it produces a growth one of the Greek names for which means 'leek-weed' and the other 'bind-weed.' Another variety of the same shrub has a hair-like leaf resembling fennel, and grows on rocks, while the one above grows in shallow water near the coast; both kinds shoot in spring-time and die off in autumn. The phycos growing on rocks round the island of Crete is also used for a purple dye; the most approved kind being that growing on the northern side of the island, as is the case in regard to sponges. A third variety resembles a grass; its root is knotted, and so is its stalk, like the stalk of a reed. *Submarine vegetation.*

XLIX. Another group of shrubs is called bryon,[c] which has the leaf of a lettuce only more wrinkled. This grows lower down than the one last mentioned; but in deep water grow a fir and an oak, each 18 inches high; they have shells clinging to their branches. The oak is reported to provide a dye for woollen fabrics, and some in deep water are actually said to bear acorns, these facts having been ascertained by shipwrecked persons and by divers. Also other very large marine trees are reported in the neighbourhood of Sicyon—for the sea-vine grows

passim nascitur, sed ficus sine foliis, rubro cortice; fit et palma fruticum generis. extra Herculis columnas porri fronde nascitur frutex et alius lauri ac thymi, qui ambo eiecti in pumicem transfigurantur.

139 L. At in oriente mirum est statim a Copto per solitudines nihil gigni praeter spinam quae sitiens vocatur, et hanc raram admodum, in mari vero Rubro silvas virere lauru maxime et oliva ferentibus bacas et, cum pluat, fungos, qui sole tacti mutantur in pumicem. fruticum ipsorum magnitudo ternum cubitorum est. caniculis referta maria,[1] vix ut prospicere e nave tutum sit remos plerumque ipsos invadentibus.

140 LI. Qui navigavere ex Indis[2] Alexandri milites, frondem marinarum arborum tradidere in aqua viridem fuisse, exemptam sole protinus in salem arescentem, iuncos quoque lapideos perquam similes veris per litora, et in alto quasdam arbusculas colore bubuli cornus ramosas et cacuminibus rubentes, cum tractarentur vitri modo fragiles, in igni autem ut ferrum
141 inardescentes, restinctis colore suo redeunte. eodem tractu insularum silvas operit aestus, quamquam altiores platanis populisque altissimis. folia iis laurea,

[1] maria *add. Pintianus.*
[2] ex Indis *Warmington*: ex Indo *Mayhoff*: in Indos.

everywhere, but there is a sea-fig, which has no leaves and a red bark, and also the class of marine shrubs includes a sea-palm. Outside the Straits of Gibraltar grows a marine shrub with the leaf of a leek, and another with the foliage of a bay-tree and of thyme; both of these when thrown up ashore by the waves turn into pumice.

Eastern submarine vegetation.

L. But in the East it is a remarkable fact that as soon as we leave Keft, passing through the desert we find nothing growing except the thorn called 'dry-thorn,' and this quite seldom; whereas in the Red Sea there are flourishing forests, mostly of bay and olive, both bearing berries and in the rainy season funguses, which when the sun strikes them change into pumice. The bushes themselves grow to the height of a yard and a half. The seas are full of sea-dogs, so much so that it is scarcely safe for a sailor to keep a look-out from the bows—in fact they frequently go for the actual oars.

LI. The soldiers of Alexander who sailed from India gave an account of some marine trees the foliage of which was green while in the water but dried up in the sun as soon as it was taken out and turned into salt; they also reported that along the coasts there were bulrushes of stone which exactly resembled real ones, and out in deep water certain shrubs of the colour of cow-horn where they branched out and turning red at the top; they were brittle, like glass when handled, but turned red-hot in fire like iron, their proper colour coming back again when they had cooled off. In the same part of the earth also the rising tide submerges forests, although the trees are higher than the loftiest planes and poplars. Their foliage is that of the bay-tree, and their blossom has the scent

flos violae et odore et colore, bacae ut oleis, et ipsae odoris iucundi, autumno nascentes, vere decidentes, foliis numquam deciduis. harum minores totas integit mare; maximarum cacumina extant, ad quae naves religantur, et cum recessit aestus, ad radices. alias quoque arbores in alto ab isdem accepimus eodem in mari visas, semper folia retinentis, fructu earum lupino simili.

142 Iuba tradit circa Trogodytarum insulas fruticem in alto vocari Isidis crinem, curalio similem sine foliis, praecisum mutato colore in nigrum durescere, cum cadat frangi; item alium qui vocatur Chariton blepharon, efficacem in amatoriis; spatalia ex eo facere et monilia feminas; sentire eum se capi durarique cornus modo et hebetare aciem ferri; quod si fefellerint insidiae in lapidem transfigurari.

and colour of violets; the berries resemble olives, and these also have an agreeable scent; they form in the autumn and fall off in spring, whereas the leaves are never shed. The smaller of these trees are entirely covered by the tide, but the tops of the largest stand out and ships are moored to them, as well as to their roots when the tide goes out. We have been informed from the same sources that other trees also have been observed in the same sea which always keep their leaves and have a fruit resembling a lupine.

Juba relates that in the neighbourhood of the Cave-dwellers' Islands a bush grows at the bottom of the sea called 'hair of Isis,' which has no leaves and resembles coral, and that when it is lopped it changes its colour to black and turns hard, and when it falls it breaks; and so does another marine bush the Greek name for which means 'the Graces' eyelid,' which is a potent love-charm; he says women make bracelets and necklaces of it. He declares that when being taken the bush is aware of it and turns as hard as horn, blunting the edge of the knife, but that if it is cut before it is aware of the danger that threatens it, it turns into stone.

BOOK XIV

LIBER XIV

I. EXTERNAE arbores indocilesque nasci alibi quam ubi coepere et quae in alienas non commeent[1] terras, hactenus fere[2] sunt; licetque iam de communibus loqui, quarum omnium peculiaris parens videri potest Italia. noscentes tantum meminerint naturas earum a nobis interim dici, non culturas, quamquam et
2 colendi maxima in natura portio est. illud satis mirari non queo, interisse quarundam memoriam atque etiam nominum quae auctores prodidere notitiam. quis enim non communicato orbe terrarum maiestate Romani imperii profecisse vitam putet commercio rerum ac societate festae pacis, omniaque etiam quae ante occulta fuerant in pro-
3 miscuo usu facta? at, Hercules, non reperiuntur qui norint multa ab antiquis prodita: tanto priscorum cura fertilior aut industria felicior fuit, ante milia annorum inter principia litterarum Hesiodo praecepta agricolis pandere orso subsecutisque non

[1] commeent? *Mayhoff*: commeant.
[2] fere ⟨narratae⟩ *Dalec.*

BOOK XIV

I. So far we have been dealing mostly with foreign trees that cannot be trained to grow elsewhere than in their place of origin and that refuse to be naturalized in strange countries. We may now speak of those common to various countries, of all of which Italy can be thought to be the special parent. Only it must be remembered by the student that for the present we are specifying their natures and not their modes of cultivation, although actually a very large factor in the nature of a tree is due to its cultivation. There is one thing at which I cannot sufficiently wonder—that of some trees the very memory has perished, and even the names recorded by authors have passed out of knowledge. For who would not admit that now that intercommunication has been established throughout the world by the majesty of the Roman Empire, life has been advanced by the interchange of commodities and by partnership in the blessings of peace, and that even things that had previously lain concealed have all now been established in general use? Still, it must be asserted, we do not find people acquainted with much that has been handed down by the writers of former days: so much more productive was the research of the men of old, or else so much more successful was their industry, when a thousand years ago at the dawn of literature Hesiod began putting forth rules for agriculture, and

Widely diffused trees: their natural history.

Some now extinct.

paucis hanc curam eius; unde nobis crevit labor, quippe cum requirenda iam sint[1] non solum postea inventa, verum etiam ea quae invenerant prisci,
4 desidia rerum internicione memoriae indicta. cuius vitii causas quis alias quam publicas mundi invenerit? nimirum alii subiere ritus circaque alia mentes hominum detinentur et avaritiae tantum artes coluntur. antea inclusis gentium imperiis intra ipsas, ideoque[2] et ingeniis, quadam sterilitate fortunae necesse erat animi bona exercere, regesque innumeri honore artium colebantur et in ostentatione has praeferebant opes, immortalitatem sibi per illas prorogari arbitrantes; quare abundabant et praemia
5 et opera vitae. posteris laxitas mundi et rerum amplitudo damno fuit. postquam senator censu legi coeptus, iudex fieri censu, magistratum ducemque nihil exornare quam census, postquam coepere orbitas in auctoritate summa et potentia esse, captatio in quaestu fertilissimo, ac sola gaudia in possidendo, pessum iere vitae pretia, omnesque a maximo bono liberales dictae artes in contrarium

[1] iam sint? *Mayhoff*: ea sint *aut* sint.
[2] *V.l.* adeoque.

not a few writers followed him in these researches—which has been a source of more toil to us, inasmuch as nowadays it is necessary to investigate not only subsequent discoveries but also those that had already been made by the men of old, because general slackness has decreed an utter destruction of records. And for this fault who can discover other causes than the general movement of affairs in the world? The fact is that other customs have come into vogue, and the minds of men are occupied about other matters: the only arts cultivated are the arts of avarice. Previously a nation's sovereignty was self-contained, and consequently the people's genius was also circumscribed; and so a certain barrenness of fortune made it a necessity to exercise the gifts of the mind, and kings innumerable received the homage of the arts, and put these riches in the front place when displaying their resources, believing that by the arts they could prolong their immortality. This was the reason why the rewards of life and also its achievements were then so abundant. But later generations have been positively handicapped by the expansion of the world and by our multiplicity of resources. After senators began to be selected and judges appointed on the score of wealth, and wealth became the sole adornment of magistrate and military commander, after lack of children to succeed one began to occupy the place of highest influence and power, and legacy-hunting ranked as the most profitable profession, and the only delights consisted in ownership, the true prizes of life went to ruin, and all the arts that derived their name 'liberal' from liberty, the supreme good, fell into the opposite class, and servility began to be the

Growth of avarice and decay of science.

6 cecidere, ac servitute sola profici [1] coeptum. hanc alius alio modo et in aliis adorare, eodem tamen habendique ad spes omnium tendente voto; passim vero etiam egregii aliena vitia quam bona sua colere malle. ergo, Hercules, voluptas vivere coepit,
7 vita ipsa desiit. sed nos oblitterata quoque scrutabimur, nec deterrebit quarundam rerum humilitas, sicuti nec in animalibus fecit, quamquam videmus Vergilium praecellentissimum vatem ea de causa hortorum dotes fugisse et in his quas [2] rettulit flores modo rerum decerpsisse, beatum felicemque gratiae, quindecim omnino generibus uvarum nominatis, tribus oleae, totidem pirorum, malo vero tantum Assyrio, ceteris omnibus neglectis.

8 II. Unde autem potius incipiamus quam a vitibus? quarum principatus in tantum peculiaris Italiae est ut vel hoc uno omnia gentium vicisse etiam odorifera possit videri bona, quoniam [3] ubicumque pubescentium odori nulla suavitas praefertur.

9 Vites iure apud priscos magnitudine quoque inter arbores numerabantur. Iovis simulacrum in urbe Populonio ex una conspicimus tot aevis incorruptum, item Massiliae pateram; Metaponti tem-

[1] perfici *Hardouin.*
[2] *Rackham*: quae.
[3] *Fels*: quamquam.

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[a] So called from its trade-route.

sole means of advancement. This deity was worshipped by different men in different manners and in different matters, although every man's prayer was directed to the same end and to hopes of possessing; indeed even men of high character everywhere preferred to cultivate the vices of others rather than the good gifts that were their own. The consequence is, I protest, that pleasure has begun to live and life itself has ceased. We, however, will carry our researches even into matters that have passed out of notice, and will not be daunted by the lowliness of certain objects, any more than we were when dealing with the animals, although we see that Virgil, the prince of poets, was led by this consideration to make omissions among the resources of the garden and in those which he has recorded has only culled out the flower of his subject, happy and gracious as he is: he has only named fifteen kinds of grapes in all and three of olives and as many pears, and of apples only the Assyrian[a] citron, neglecting all the rest. *Georgics* IV. 108.

II. But where can we better make a beginning than with the vine? Supremacy in respect of the vine is to such a degree the special distinction of Italy that even with this one possession she can be thought to have vanquished all the good things of the world, even in the department of scents, inasmuch as when the vine is in blossom all over the country it gives a scent that surpasses any other in fragrance.

Even on account of its size the vine used in early days rightly to be reckoned as belonging to the class of trees. In the city of Piombino is to be seen a statue of Jupiter made of a single vine-stalk that has resisted decay for many ages; and similarly a bowl at Marseilles; the temple of Juno at Metapontum has stood

plum Iunonis vitigineis columnis stetit; etiam nunc scalis tectum Ephesiae Dianae scanditur una e vite Cypria, ut ferunt, quoniam ibi ad praecipuam amplitudinem exeunt. nec est ligno ulli aeternior natura.

Verum ista ex silvestribus facta crediderim.
10 III. Hae vites tonsura annua coercentur, et vis earum omnis evocatur in palmites aut deprimitur in propagines, sucique tantum gratia ex iis petitur[1] pluribus modis ad caeli mores solique ingenia. in Campano agro populis nubunt, maritasque complexae atque per ramos earum procacibus bracchiis geniculato cursu scandentes cacumina aequant, in tantum sublimes ut vindemiator auctoratus rogum ac tumu-
11 lum excipiat, nulla fine crescendi; vidique[2] etiam totas[3] villas et domos ambiri singularum palmitibus ac sequacibus loris. quodque memoria dignum inter prima Valerianus quoque Cornelius existimavit, una vitis Romae in Liviae porticibus subdiales inambulationes umbrosis pergulis opacat, eadem duodenis musti amphoris fecunda.

12 Ulmos quidem ubique exuperant, miratumque altitudinem earum Ariciae ferunt legatum regis Pyrrhi Cineam facete lusisse in austeriorem gustum vini, merito matrem eius pendere in tam alta

[1] *Mayhoff*: exisse intus *aut* ex his est.
[2] *Mayhoff*: crescent dividique.
[3] totas *Mayhoff*: potius (porticus *Detlefsen*).

supported by pillars of vine-wood; and even at the present day we ascend to the roof of the temple of Diana at Ephesus by a staircase made from a single vine, grown it is said at Cyprus, inasmuch as vines grow to an exceptional height in that island. And no other timber lasts for longer ages.

Cultivation of the vine: vines trained on trees or stakes.

But I am inclined to believe that the things mentioned were made of the wood of the wild vine. III. Our own vines are kept down by yearly pruning, and all their strength is drawn out into shoots, or else thrown downward into layers, and the only benefit these supply is that of their juice, obtained by means of a variety of methods adapted to the peculiarities of the climate and the qualities of the soil. In Campania the vines espouse the poplars, and embracing their brides and climbing with wanton arms in a series of knots among their branches, rise level with their tops, soaring aloft to such a height that a hired vintager expressly stipulates in his contract for the cost of a funeral and a grave! In fact they never stop growing; and I have before now seen entire country houses and mansions encircled by the shoots and clinging tendrils of a single vine. And a thing that was considered in the first degree worthy of record also by Valerianus Cornelius is that a single vine in the colonnades of Livia at Rome protects the open walks with its shady trellises, while at the same time it produces 12 amphorae of juice yearly.

Elms indeed are everywhere overtopped by vines, and there is a story that Cineas, the ambassador of King Pyrrhus, was surprised at the height to which the vines grew at La Riccia and made an amusing joke about the rather rough flavour of the wine, to the effect that the parent of it thoroughly deserved

cruce. rumpotinus vocatur et alio nomine opulus arbor
Italiae Padum transgressis, cuius tabulata in orbem
patula replent puroque perductae dracone in palmam
eius, inde in subrectos ramorum digitos flagella dis-
13 pergunt. eaedem modici hominis altitudine admini-
culatae sudibus horrent vineamque faciunt e talea [1]
inprobo perticarum [2] reptatu pampinorumque per
inania omnia [3] discursu atria media conplentes. tot
differentias vel sola tantum Italia recipit.

Stat provinciarum aliquarum per se vitis sine ullo
pedamento, artus [4] suos in se colligens et brevitate
14 crassitudinem pascens. vetant hoc aliubi venti, ut
in Africa et Narbonensis provinciae partibus, ubi
excrescere ultra suos pollices prohibitae semperque
pastinatis similes herbarum modo vagantur per arva
ac sucum terrae passim uvis bibunt, quae ob id
magnitudinem infantium puerorum in interiore parte
Africae exsuperant. vina non alibi tristiora, sed
uva non alibi gratior callo, unde possit invenisse
15 nomen durus acinus. namque genera magnitudine,
colore, saporibus acini innumera etiamnum multi-
plicantur vino: hic purpureo lucent colore, illic
fulgent roseo nitentque viridi; candicans enim

[1] *Sillig*: et alia.
[2] *V.l. om.* perticarum.
[3] *Mayhoff*: peritiam damna.
[4] *V.l.* arcus.

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[a] Perhaps a maple.

being hung on such a lofty gibbet! There is an Italian tree [a] on the other side of the Po called the rumpotinus, or by another name the opulus, the broad circular stories of which are covered by vines which spread out with their bare snaky growth to where the tree forks and then throw out their tendrils along the upraised fingers of the branches. Also vines when propped up with stakes about as tall as a man of middle height make a shaggy growth and form a whole vineyard from a cutting, by the unconscionable creeping of their rods and the rambling of their tendrils over all the empty gaps, completely filling the middle of a courtyard. So many are the different varieties that even Italy alone harbours.

In some of the provinces the vine stands by itself without any prop, gathering its limbs together inward and providing nutriment for thick growth by means of their shortness. In other places this is prohibited by the wind, for instance, in Africa and in parts of the province of Narbonne, where vines are prevented from growing beyond their pruned stumps and always resemble plants that are hoed, straying across the fields like herbaceous plants and drinking up the juice of the soil with their grapes as they go; and consequently in the interior of Africa the clusters exceed the body of an infant child in size. In no other country are the vines harsher, but nowhere else have the grapes a more agreeable firmness, which is very possibly the source of the name 'hard grape.' As to varieties in respect of size, colour and flavours of the berry they are innumerable and they are actually multiplied by the varieties of wine: in one district they have a brilliant purple colour, in another a rosy glow or a glossy green tint; for grapes that are

Varieties of grapes and their uses.

nigerque vulgares. tument vero mammarum modo bumasti; praelongis dactyli porriguntur acinis. est et illa naturae lascivia ut praegrandibus adhaereant parvi comites, suavitate certantes; leptorragas has
16 vocant. durant aliae per hiemes, pensili concamaratae nodo; aliae in sua tantum continentur anima ollis fictilibus et insuper doliis inclusae, stipatae vinaceis circumsudantibus; aliis gratiam, qui et vinis, fumus adfert, fabrilisque in ea re gloriam praecipuam[1] fornacibus Africae Tiberii Caesaris auctoritas fecit; ante eum Raeticis prior mensa erat uvis
17 ex[2] Veroniensium agro. quin et a patientia nomen acinis datur passis. conduntur et musto uvae, ipsaeque vino suo inebriantur, aliae decocto in musto dulcescunt; aliae vero subolem novam in ipsa matre expectant tralucidae vitro, additque acinis eandem quam in doliis amphorisve duratricem illam
18 firmitatem austeritas picis infusa pediculo. iam inventa vitis per se in vino picem resipiens, Viennensem agrum nobilitans Taburno Sotanoque et Helvico generibus, non pridem haec inlustrata atque Vergilii vatis aetate incognita, a cuius obitu xc aguntur

[1] *Mayhoff*: in ea gloria praecipua in.
[2] uvis ex *Mayhoff*: et ullis (e villis *edd.*).

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[a] The Greek name means 'cow's-udder grapes.'
[b] Really not from *patior* but from *pando*, spread out to dry in the sun.

merely white and black are the common sorts. But the large-cluster [a] grapes swell out like a breast and the finger-grapes have an exceptionally long berry. Also such is the sportiveness of nature that very large grapes have small grapes clinging to them as companions which rival them in sweetness: these are called in Greek 'small-berry' vines. Some grapes will last all through the winter if the clusters are hung by a string from the ceiling, and others will keep merely in their own natural vigour by being stood in earthenware jars with casks put over them, and packed round with fermenting grape-skins; others can be given a flavour by smoke, which also adds flavour to wines, and the authority of Tiberius Caesar has caused particular glory in regard to the efficiency of smoke in this respect to attach to the forges of Africa; before his time priority at the table belonged to the Raetic grapes from the territory of Verona. Moreover, raisins are called 'passi' [b] from having 'endured' the sun. Grapes are also preserved in must, and so made drunk with their own wine, and some are made sweeter by being placed in must that has been boiled down; but others remain on the parent vine to await the coming of a new generation, acquiring a glassy transparency, and the astringency of pitch poured on the footstalk gives them the same durable hardness that it gives to wine in casks or jars. A vine has now been discovered that of itself produces a flavour of pitch in the wine: this vine gives celebrity to the territory of Vienne by the varieties of Monte Taburno and of the Sotani and Helvii; it has become famous only recently and was unknown in the period of the poet Virgil, who died 90 years ago. Add that

Raisins.

19 anni. quid quod inserta castris summam rerum imperiumque continet centurionum in manu vitis, et opimo praemio tardos ordines ad lentas[1] perducit aquilas, atque etiam in delictis poenam ipsam honorat? nec non vineae oppugnationum dedere rationem. nam in medicaminibus adeo magnum optinent locum ut per sese vino ipso remedia sint.

20 IV. Genera vitium numero conprehendi posse unus existimavit Democritus, cuncta sibi Graeciae cognita professus: ceteri innumera atque infinita esse prodiderunt, quod verius apparebit ex vinis. nec omnia dicentur, sed maxime insignia, quippe totidem paene sunt quot agri, quamobrem celeberrimas vitium aut quibus est aliqua proprietate miraculum ostendisse satis erit.

21 Principatus datur Aminaeis firmitatem propter senioque proficientem vini eius utique vitam. quinque earum genera; ex his germana minor[2] minore[3] acino melius deflorescit, imbres tempestatesque tolerat, non item maior, sed in arbore quam in iugo
22 minus obnoxia. gemellarum, quibus hoc nomen uvae semper geminae dedere, asperrimus sapor sed vires

[1] laetas *vel* elatas *edd.*
[2] *Edd.*: minore.
[3] minore *add.* (*vel* acino *om.*) *Rackham.*

[a] The centurion's rod of office was a vine sapling.
[b] *I.e.* to promotion, though slow in coming.
[c] Only soldiers who were Roman citizens were beaten with a vine sapling.
[d] The *vinea* was a portable penthouse under which troops advanced to lay siege to a town; the idea of it was taken from trellised vines.
[e] Viz. germana minor, germana maior, gemella minor, gemella maior, lanata.

the vine [a] has been introduced into the camp, and in the hand of the centurions is the mainstay of supreme authority and command and with its rich reward it lures on the laggard ranks to the tardy eagles,[b] and even in offences it confers honour on punishment itself.[c] Moreover it was vineyards [d] that suggested a method for siege-trains. As for medicines, grapes hold such an important place among them that they act as remedies in themselves, merely by supplying wine.

IV. Democritus, who professed to know all the different kinds of vines in Greece, was alone in thinking it possible for them to be counted, but all other writers have stated that there is a countless and infinite number of varieties; and the truth of this will appear more clearly if we consider the various kinds of wines. We shall not mention all of them, but the most famous, inasmuch as there are almost as many wines as there are districts, so that it will be enough to have pointed out the most celebrated kinds of wine or the ones remarkable for some special property. *Varieties of vine.*

The highest rank is given to the vines of Aminaea, on account of the body of that wine and its life, which undoubtedly improves with age. There are five varieties [e] of these vines; of these the 'younger sister' with a smaller berry sheds its blossom better [f] and can stand rain and stormy weather, which is not the case with the 'elder sister,' though this is less liable to damage when trained on a tree than when on a frame. The 'twin sisters,' which have got this name because the bunches always grow in pairs, give a wine with a very rough flavour but of ex- *The Aminaean kinds the best.*

[f] *I.e.* with less damage to the young grape, *cf.* § 34.

praecipuae. ex his minor austro laeditur, ceteris ventis alitur, ut in Vesuvio monte Surrentinisque collibus; in reliquis Italiae partibus non nisi arbori accommodata. quintum genus lanatae; ne Seras miremur aut Indos adeo, lanugo eam vestit. prima ex Aminaeis maturescit ocissimeque putrescit.

23 Proxima dignitas Nomentanis rubente materia, quapropter quidam rubellas appellavere vineas. hae minus fertiles, vinaceis et faece nimiae, contra pruinas fortissimae, siccitate magis quam imbre, aestu quam algore vexantur; quamobrem in frigidis umidisque principatum obtinent. fertilior quae minor acino et folio scissa minus.

24 Apianis apes dedere cognomen, praecipue earum avidae. ex iis duo genera lanugine et ipsa pubescunt; distant quod altera celerius maturescit, quamquam et altera properante. situs frigidi iis[1] non respuuntur, et tamen nullae celerius imbre putrescunt. vina primo dulcia austeritatem annis accipiunt. Etruria nulla magis vite gaudet.

25 Et hactenus potissima nobilitas datur peculiaribus atque vernaculis Italiae: ceterae advenere. e[2] Chio Thasove Graecula non inferior Aminaeis bonitate,

[1] *Mayhoff*: frigidus *aut* frigidos.
[2] e *add. Pintianus.*

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[a] A reference to Indian cotton and Chinese silk, the latter often supposed to be a wool obtained from trees.

[b] Probably the muscatel (named from *musca*, a fly, attracted by its sweetness).

ceptional strength; the smaller of these 'twins' is damaged by a south wind, but the other winds give it nutriment, for instance on Mount Vesuvius and the hills of Sorrento, but in all other parts of Italy it only flourishes when trained on trees. The fifth kind is the 'woolly' grape—for, to prevent our being very much surprised at the Chinese or the Indians,[a] it is covered with a coat of down. It ripens first of the Aminaean grapes, and decays the most quickly.

Next the Nomentane.

The next rank belongs to the vines of Mentana, the wood of which is red, in consequence of which some people have called them the 'ruddy vines.' These produce less wine, as they have too much husk and lees, but they are very strong in resisting frost, and they suffer worse from drought than rain and from heat than cold, and consequently they hold the first place in cold and damp localities. The variety with a smaller berry is more productive, and the one with a cleft leaf less.

The muscatel.

The 'bee-vine'[b] is so called because bees are specially fond of it. It has two varieties, which also are covered with down in the young state; the difference between them is that one ripens more quickly than the other, although the latter also ripens fast. These vines do not object to cold situations, and nevertheless no others rot more quickly from rain. The wines made from them are sweet at first but acquire roughness in the course of years. In Tuscany this vine flourishes more than any other.

Foreign vines naturalized in Italy.

So far we assign the chief distinction to the vines peculiar and indigenous to Italy. The remaining kinds have come from abroad. From Chios or Thasos is imported a Greek light wine not inferior in quality to the Aminaean vintages; the vine has a very tender

praetenera acino, et uva tam parva ut nisi pinguissimo solo colere non prosit. eugeniam Tauromenitani colles cum generositatis cognomine misere Albano tantum agro, quoniam alio [1] tralata statim mutatur: namque est aliquis tantus locorum amor ut omnem in iis gloriam suam relinquant nec usquam transeant
26 totae. quod et in Raetica Allobrogicaque quam supra picatam appellavimus evenit, domi nobilibus nec agnoscendis alibi. fecundae tamen bonitatis vice copiam praestant, eugenia ferventibus locis, Raetica temperatis, Allobrogica frigidis, gelu mature-
27 scens et colore nigra. ex iis quas adhuc diximus, sed etiam e nigris, vina vetustate in album colorem transeunt. reliquae ignobiles, aliquando tamen caeli aut soli opera non [2] fallunt vetustate,[3] sicuti Faecenia et cum ea florens Biturigiaca acino rarior, numquam floris obnoxii, quoniam non favonium [4] antecedunt ventisque et imbribus resistunt, meliores tamen algentibus locis quam calidis, umidis quam sitientibus.
28 visulla grandi magis quam denso uvarum partu, impatiens variantis caeli, sed contra tenorem unum algoris aestusve constans. quae minor est ex eo genere melior. in eligendo solo morosa pingui

[1] alio *add. Rackham.*
[2] vino *Detlefsen.*
[3] *Mayhoff* (?): vetustatem.
[4] non favonium *add. Ian coll.* II 122, XV 12 *sq.*

[a] Or possibly Bordeaux.
[b] Not identified.

grape, and such small clusters that it does not pay to grow it except in a very rich soil. The eugenia, with its name denoting high quality, has been imported from the hills of Taormina to be grown only in the territory of Alba, as if transplanted elsewhere it at once degenerates: for in fact some vines have so strong an affection for certain localities that they leave all their reputation behind there and cannot be transplanted elsewhere in their full vigour. This occurs also with the Rhaetian and Allobrogian grapes—the latter the grape with the flavour of pitch which we mentioned above—which are famous at § 18.
home but not worth recognition elsewhere. All the same, being good bearers they make up in quantity what they lack in quality, the eugenia grape in warm localities, the Raetic in those with a moderate climate and the Allobrogian in cold districts, as it ripens in frost and has a black colour. The wines made from the grapes so far mentioned, even from the black ones, turn to a white colour with age. The remaining vines are of no quality, although occasionally owing to the agency of climate or soil they are not disappointing when old, as in the case of the Faecenian vine, and that of Bourges[a] which blossoms at the same time but has fewer grapes; their blossom is never liable to injury, as they do not come before the west wind of early spring and can withstand wind and rain, although they do better in cold places than in warm ones and in damp situations than in dry. The visulla[b] bears clusters of large size rather than closely packed; it cannot stand changes of weather, but lasts well against a continuous spell of cold or heat. The smaller variety of this kind is the better one. It is difficult to please in choice of soil,

putrescit, gracili omnino non provenit; mediam temperiem delicate quaerit, ob hoc Sabinis collibus familiaris. uva eius indecora visu, sapore iucunda; nisi matura protinus rapitur, etiam non putrescens cadit. contra grandines eam tuetur foliorum amplitudo atque duritia.

29 Insignes iam colore inter purpureas nigrasque medio
helvolae saepius variantes et ob id varianae a qui-
busdam appellatae. praefertur in iis nigrior; utra-
que alternis annis fertilis, sed melior vino cum parcior.
et praeciae duo genera magnitudine acini dis-
cernuntur, quibus materies plurima uvaque ollis
30 utilissima; folium apio simile. baliscam Dyrrachini
celebrant, Hispaniae coccolobin vocant; rarior uva
aestus austrosque tolerat, capiti inimica, copia larga.
Hispaniae duo genera eius faciunt, unum oblongo
acino, alterum rotundo; novissimas vindemiant.
quo dulcior est coccolobis, hoc melior; sed et austera
transit in dulcem vetustatem,[1] et quae dulcis fuit in
31 austeritatem; tunc Albano vino aemulantur. tra-
dunt vesicae vitiis utilissimum ex iis potum. albuelis

[1] *V.l.* vetustate.

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[a] Said to mean 'cox-comb' in the vernacular.

as in a rich soil it decays and in a thin soil it does not come on at all; its fastidiousness requires an intermediate blend of soil, and that is why it is common in the Sabine hill country. Its grapes are not attractive to look at, but have an agreeable flavour; if they are not gathered as soon as they are ripe, they will fall off even before they decay. Its hardiness and the size of the leaves protect the grapes against hailstorms.

The grapes called helvolae again are remarkable for rather frequently varying in their colour, which is midway between the purple grapes and the black ones, and they have consequently been called by some people varianae. Among them the blacker kind is preferred; both kinds bear large crops every other year, though they make better wine when the crop is less abundant. Also the praecia vine has two varieties, distinguished by the size of the grape; these vines make a great deal of wood, and their bunches are most useful for storing in jars; the leaf resembles parsley. The people of Durazzo speak highly of the balisca vine, which the Spanish provinces call coccolobis [a]; its grapes grow in rather scanty bunches and can stand hot weather and south winds; its wine is apt to go to the head, but the yield is abundant. The Spanish provinces distinguish two kinds of this vine, one having an oblong grape and the other a round one; they gather them last of all. The sweeter the coccolobis grape is, the better it is; but even if it has a rough taste it turns sweet with age, and one that was sweet turns rough; in the last state they are held to rival the wine of Alba. It is said that to drink the juice of this grape is very good for disorders of the bladder. The

Other kinds of grapes grown everywhere for wine.

summis arboribus fertilior est, visulla imis; quamobrem circa easdem satae diversitate naturae locupletant. inerticulam e nigris appellavere, iustius sobriam dicturi, inveterato praecipue commendabilem vino sed viribus innoxiam, siquidem temulentiam sola
32 non facit. fertilitas commendat ceteras principemque helvennacam. duo eius genera: maior, quam quidam longam, minor quam emarcum[1] appellant, non tam fecundam sed gratiorem haustu; discernitur folio circinato, verum utraque gracilis. furcas subdere iis necessarium, alioqui ubertatem suam non tolerant. maritimo adflatu gaudent,
33 roscida odere. nulla vitium minus Italiam amat, rara, parva, putrescens in ea, vino quoque quod genuit aestatem non exuperans; nec alia macro solo familiarior. Graecinus, qui alioqui Cornelium Celsum transcripsit, arbitratur non naturam eius repugnare Italiae sed culturam avide palmites evocantium; ob id fertilitate sua absumi, si non praepinguis soli ubertas lassescentem sustineat. carbunculare ne-

[1] *Hardouin e Columella*: marcum.

albuelis vine bears more fruit at the top of the trees that it is grown on, the visulla on the bottom branches; and consequently, when both are planted round the same trees, owing to this difference of habit they produce rich crops. One of the black grapes has been named 'the good-for-nothing,' though it might more properly be styled 'the sober,' as the wine it produces is admirable, particularly when old, but though strong it has no ill effects: in fact this is the only vintage that does not cause intoxication. All the other kinds of vine have the recommendation of bearing freely, and chief among them the helvennaca. Of this there are two kinds, one larger, which some people call the long helvennaca, the other smaller, called emarcus; the latter is not so prolific but produces a wine of more agreeable flavour; it is distinguished by its rounded leaf, but both kinds have a slender growth. They require to be supported on forked props, otherwise they cannot support the weight of their abundant fruit. They like a sea breeze, and dislike damp dews. None of the vines love Italy less, for there it grows leafless and stunted and soon decays, and also the wine it produces will not keep beyond the summer; and no other vine is more at home in a thin soil. Graecinus, who has generally copied Cornelius Celsus, thinks that it is not the nature of this vine to which Italy is not friendly but the mode of cultivating it, as growers are too eager to make it put out shoots; the consequence of this, he says, is that it is used up by its own fertility, unless the bounty of the soil is so rich as to afford it support when it begins to droop. It is said that this vine never contracts carbuncle, which is a very

gatur, magna dote, si verum est aliqua in vite caelo non esse ius.

34 Aestus fert spionia, quam quidam spineam vocant, autumnique imbribus pinguescit; quin immo nebulis una alitur, ob id Ravennati agro peculiaris. veniculam inter optume deflorescentes et ollis aptissimam Campani malunt surculam vocare, alii scapulam, Tarracina Numisianam, nullas vires proprias habentem, sed totam perinde ac solum valeat, Surrentinis
35 tamen efficacissima testis Vesuvio tenus. ibi enim Murgentina e Sicilia potentissima, quam Pompeianam aliqui vocant, laeto [1] demum feracem, sicut horconia in Campania tantum. e diverso arceraca Vergilio argitis dicta ultro solum laetius facit, ipsa contra imbres et senectam fortissima, vino quidem vix annua ac vilitatis cibariae sed ubertate praecipua. tolerat et annos mettica, contra omne sidus firmissima, nigro acino, vinis in vetustate rufescentibus.

36 Et hactenus publica sunt genera, cetera regionum locorumque aut ex his inter se insitis mixta, si quidem in [2] Tuscis peculiaris est Tudertibus,[3] atque

[1] laeto ⟨solo⟩? *Rackham*: Latio *edd.*
[2] in *add.*? *Mayhoff.*
[3] Tudertibus? *Mayhoff* Tudernis.

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[a] *Georgics* II. 99.

valuable property, if indeed it is true that there is any vine that is exempt from the power of the climate.

The spionia, called by some the thorn-vine, is able to bear heat, and is ripened by rainy weather in autumn; what is more, indeed, it is the only vine that thrives from fog, on which account it is specially grown in the district of Ravenna. The venicula is one of the best vines that shed their flowers, and its grapes are particularly well suited for preserving in jars; the people of Campania prefer to call it by the name of surcula, and others by that of scapula, while the name for it at Tarracina is Numisiana; it has no strength of its own but is entirely conditioned by the strength of the soil; all the same, as far south as Vesuvius it is very potent if kept in earthenware jars from Sorrento. For at Vesuvius there is Murgentina, a very strong vine imported from Sicily, called by some Pompeiana, which only bears well in a rich soil, just as the horconia vine only flourishes in Campania. The opposite is the case with the arceraca, called in Virgil[a] argitis, which has the property of imparting extra richness to the soil, while itself offering a very stout resistance to rain and to old age, though it will hardly produce wine every year, and its grapes are only valued for eating, but it bears exceptionally large crops. The mettica vine also stands the years, and faces all weather very strongly; it bears a black grape, and its wines acquire a reddish colour in old age.

Italian local varieties of grapes for making wine.

The kinds of vine mentioned so far are grown everywhere, but those remaining belong to particular districts and places, or are crosses produced by grafting one of these on another: thus among the vines of Tuscany that of Todi is a special variety, and also

etiam nomen iis Florentiae sopina, Arretio talpona et etesiaca et conseminea. talpona nigra candidum facit mustum; etesiaca fallax, quo plus tulit, hoc laudabilius fundit, mirumque, fecunditate pariter et bonitate cessat; conseminea[1] nigra, vino minime durante, uva maxime, post xv dies quam ulla alia
37 metitur, fertilis set cibaria. huius folia sicuti labruscae prius quam decidant sanguineo colore mutantur; evenit hoc et quibusdam aliis pessimi generis argumento. itriola Umbriae Mevanatique et Piceno agro peculiaris est, Amiternino pumila.[2] isdem bananica fallax est, adamant tamen eam.
38 municipii sui uvam[3] Pompeiani[4] nomine appellant, quamvis Clusinis copiosiorem; municipii et Tiburtes appellavere, quamvis oleagineam nuper invenerint a similitudine olivae: novissima haec uvarum ad hoc tempus reperta est. vinaciolam soli noverunt Sabini, calventinam Gaurani. scio e Falerno agro tralatas vocari Falernas, celerrime ubique degenerantes. nec non Surrentinum genus fecere aliqui praedulci uva.
39 capnios et buconiates et tharrupia in Thurinis collibus

[1] *Warmington*: consemina.
[2] *Rackham*: pumula.
[3] *Detlefsen*: municipii suam.
[4] *Rackham*: Pompei.

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[a] *Conseminea* denotes growing from several different seeds.

they have special names, a vine at Florence being called sopina and some at Arezzo 'mole-vine' and 'seasonal vine' and 'crossed vine.'[a] The mole-vine has black grapes and makes a white must; the seasonal vine is a deceptive plant, giving a more admirable wine the larger crop of grapes it bears, and, remarkable to say, coming to the end of its fertility and its good quality at the same time; the crossed vine has black grapes and makes a wine that does not keep at all long, but its grape keeps a very long time, and it is gathered a fortnight later than any other variety, bearing a large crop of grapes but only good for eating. The leaves of this vine, like those of the wild vine, turn a blood-red colour before they fall off; this also happens with some other vines, and is a sign of extremely inferior quality. The itriola is peculiar to Umbria and to the districts of Bevagna and Ancona, and the 'dwarf-vine' to that of San Vettorino. The same districts have the bananica, an unreliable vine, though people become fond of it. The people of Pompei give the name of their township to a grape, although it grows in greater quantity at Chiusi; the people of Tivoli also name a grape after their township, although they have lately discovered the 'olive-grape,' so called from its resemblance to an olive: this is the latest grape introduced hitherto. The vinaciola grape is only known to the Sabines and the calventina to the people of Mount Gaurus. Vines transplanted from the Falernian territory are, I am aware, called 'Falernian,' but they very quickly degenerate everywhere. Some people also have made out a Sorrento variety, with a very sweet grape. The 'smoke-grape,' the 'mouthful' and the tharrupia, which grow on the hills of Thurii, are not picked before there has been a

non ante demetuntur quam gelaverit. Pariana gaudent Pisae, Mutina Perusinia nigro acino, intra quadriennium albescente vino. mirum ibi cum sole circumagi uvam quae ob id streptis vocatur, et in Italia Gallicam placere, trans Alpis vero Picenam. dixit Vergilius Thasias et Mareotidas et Lageas conplurisque externas, quae non reperiuntur in Italia.

40 Sed sunt etiamnum insignes uva, non vino: ambrosia e duracinis (sine ullis vasis in vite servabilis[1]—tanta est contra frigora, aestus tempestatesque firmitas; nec [orthampelos][2] indiget arbore aut palis, ipsa se sustinens, non item dactylides digitali gracilitate), columbinae a racemosis,[3] et magis purpureae
41 cognomine bimammiae quando non racemos sed uvas alias gerunt, item tripedanea cui nomen a mensura est, item scirpula passo acino et Raetica in maritimis Alpibus appellata, dissimilis laudatae illi; namque haec brevis, conferta acino, degener vino, sed cute omnium tenuissima, nucleo (quod chium vocant) uno ac minimo, acinum praegrandem unum alterumve habens. est et nigra Aminea, cui Syriacae nomen inponunt, item Hispana ignobilium probatissima.

[1] *V.l.* servatur.
[2] *Gloss. Mueller.*
[3] *V.l.* racemosissimis.

frost. Pisa rejoices in the vine of Paros, and Modena in the vine of Perugia, which has a black grape and makes a wine that within four years turns white. It is a remarkable fact that at Modena there is a grape that turns round with the sun and is consequently called in Greek the 'revolving grape'; and that in Italy a grape from Gaul is popular, but across the Alps that of Picenum. Virgil mentions a Thasian vine, a Maraeotid and a Lagean, and a number of other foreign kinds that are not found in Italy. *Georgics* II. 91.

Vines grown for fruit. But again there are some vines which are distinguished for their grapes and not for their wine, for instance, among the hard-berry group the ambrosia grape, which needs no jars but will keep on the vine, so strong is its resistance to cold and heat and to bad weather, nor does it require a tree or stakes to support it, as it sustains its own weight, though this is not the case with the dactylis, the stalk of which is only the thickness of a finger; and among the vines with large bunches the pigeon-vine, and still more the purple 'double-bosomed' vine, so called because it does not bear clusters but only secondary bunches; and also the 'three-foot' vine, named from its size, and also the 'rush' vine with its shrivelled grape and the vine called the Raetic vine in the Maritime Alps, which is quite unlike the famous vine of that name, because this is a short-stalked vine with closely packed clusters and producing a low class of wine; but it has the thinnest skin of any grape, and a single very small stone (called chium), and one or two grapes in each bunch are exceptionally large. There is also the black Aminean grape to which they give the name of 'Syrian grape,' and also the Spanish grape, which is the most highly rated of the inferior kinds.

42 In pergulis vero seruntur escariae appellatae e duracinis, albae nigraeque, et bumasti totidem coloribus, ac nondum dictae Aegia et Rhodia et uncialis, velut a pondere acini, item picina omnium nigerrima, et coronario naturae lusu stephanitis, acinos foliis intercursantibus, et quae forenses vocantur, celeres proventu, vendibiles aspectu, portatu faciles. contra damnantur etiam visu cinerea et rabuscula[1] et asinusca, minus tamen caudas vulpium imitata alopecis.
43 Alexandrina appellatur vitis circa Phalacram brevis, ramis cubitalibus, acino nigro fabae magnitudine, nucleo molli et minimo, obliquis racemis praedulcibus, folio parvo et rotundo, sine divisuris. septem his annis in Narbonensis provinciae Alba Helvia inventa est vitis uno die deflorescens, ob id tutissima; carbonicam[2] vocant, quam nunc tota provincia conserit.
44 V. Catonum ille primus, triumpho et censura super cetera insignis, magis tamen etiamnum claritate litterarum praeceptisque omnium rerum expetendarum datis generi Romano, inter prima vero agrum colendi, ille aevi confessione optimus ac sine aemulo

[1] rubuscula ('little bramble-grape') ? *Warmington.*
[2] *Edd.* (*aut* Narbonicam): carbunican.

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[a] Perhaps so called from its grey colour.
[b] Ἀλώπηξ, 'fox.'
[c] M. Porcius Cato, whose *De re rustica* (or *De agri cultura*) is quoted below, celebrated a triumph in 194 B.C. for his victories in Spain, and was censor in 184 B.C. The capture and destruction of Carthage and Corinth took place in 146 B.C., three years after his death.

The kind called 'table-grapes,' one of the hard-berry group, are grown on trellises—they are both white and black—and so are the 'cow's-udder' grapes, also of both colours, and those of Aegium and of Rhodes, not mentioned before, and the 'one-ounce' grape, apparently named from the weight of the berry, and also the 'pitch grape,' the darkest in colour of all the black grapes, and the 'garland' grape, the clusters of which by a sport of nature are arranged in a wreath with leaves interspersed among the berries, and the grapes called 'market-grapes,' a very quick bearer that attracts buyers by its appearance and stands carriage well. On the other hand the ashy grape and the dusky grape and the donkey-grape[a] are condemned even by their appearance, though this is less the case with the alopecis,[b] which resembles a fox's brush. A grape growing in the vicinity of Phalacra is called the Alexandrian grape; it is a low-growing vine with branches only eighteen inches long and a black grape the size of a bean, with a soft and very small stone; the clusters hang aslant and are extremely sweet; the leaf is small and round, and has no clefts. Within the last seven years there has been discovered at Viviers in the province of Narbonne a vine whose blossoms wither in a day and which is consequently extremely immune to bad weather; it is called the 'charcoal-vine,' and is now grown by the whole province.

V. The elder Cato,[c] who was exceptionally celebrated for his triumph and his censorship, though yet more for his literary distinction and for the precepts that he has given to the Roman nation upon every matter of utility, and in particular as to agriculture—a man who by the admission of his contemporaries was a supremely competent and unrivalled agricul- *Cato on growing vines.*

agricola, pauca attigit vitium genera, quarundam ex
45 his iam etiam nominibus abolitis. separatim toto
tractatu sententia eius indicanda est, ut in omni
genere noscamus quae fuerint celeberrima anno DC
urbis, circa captas Carthaginem ac Corinthum, cum
supremum is diem obiit, et quantum postea CCXXX
annis vita profecerit. ergo de vitibus uvisque ita
46 prodidit: 'Qui locus vino optimus dicitur[1] esse et
ostentus solibus, Aminium minusculum et geminum
eugenium, helvium minusculum conserito. qui locus
crassior aut nebulosior, Aminium maius aut Murgentinum,
Apicium Lucanum serito. ceterae vites
miscellae maxime in quemvis agrum conveniunt.
in olla cum[2] vinaceis conduntur Aminium minusculum
et maius et Apicium; eadem in sapa et musto,
in lora recte conduntur. quas suspendas duracinas
Aminias maiores, vel ad fabrum ferrarium pro passis
47 hae recte servantur.' Nec sunt vetustiora de illa re
Latinae linguae praecepta: tam prope ab origine
rerum sumus. Aminiam proxime dictam Varro
Scantianam vocat.

In nostra aetate pauca exempla consummatae
huius artis fuere, verum eo minus omittenda, ut
noscantur etiam praemia, quae in omni re maxime
48 spectantur. summam ergo adeptus est gloriam Acilius

[1] *V.l.* dicetur.
[2] cum *add. Rackham* (in vinaceis *Cato*).

turalist—has dealt with only a few varieties of the vine, including some even the names of which are now extinct. His opinion deserves to be set out separately and handled at full length, to make us acquainted with the varieties which were the most famous in the whole of this class in the year 154 B.C., about the time of the taking of Carthage and Corinth, the period of Cato's demise—and to show us how great an advance civilization has made in the subsequent 230 years. The following therefore are the remarks that he made on the subject of vines and grapes: 'In the locality pronounced to be best for the vine and fully exposed to the sun, you should plant the small variety of Aminian and the double eugenium, and also the small helvia. In a denser soil or a locality more liable to fog you should plant the larger Aminian or the Murgentine, the Apician, and the Lucanian. All the other varieties of vine, especially hybrids, are suited to any kind of land. The small Aminian grape and the larger one and the Apician are stored unstoned in a jar; they can also be kept in new wine boiled down and must, and properly in after-wine. The larger Aminian hard-berry grapes, which one you hang up, are properly kept, for instance at a blacksmith's forge, to make raisins.' Nor are there any older instructions on this subject written in Latin, so near we are to the origin of things. The Aminian grape last mentioned is called by Varro the Scantian.

R. R. VI. 4-. VII. 2.

Modern successes in vine-growing.

In our own period there have been few instances of consummate skill in this field, but it is all the more proper on that account not to omit them, so as also to make known the rewards of success, which in every department attract the greatest attention. Well, the greatest distinction was achieved by Acilius

Sthenelus e plebe libertina LX iugerum non amplius vineis excultis in Nomentano agro atque $\overline{\text{CCCC}}$
49 nummum venundatis. magna fama et Vetuleno Aegialo perinde libertino fuit in Campania rure Liternino, maiorque etiam favore hominum quoniam ipsum Africani colebat exilium; sed maxima, eiusdem Stheneli opera, Remmio Palaemoni, alias grammatica arte celebri, in hisce XX annis mercato rus $\overline{\text{DC}}$ nummum in eodem Nomentano decimi lapidis ab
50 urbe deverticulo. est autem usquequaque nota vilitas mercis per omnia suburbana, ibi tamen maxime, quoniam et neglecta indiligentia [1] praedia paraverat ac ne in pessimis quidem elegantioris soli. haec adgressus excolere non virtute animi sed vanitate primo, quae nota mire in illo fuit, pastinatis de integro vineis cura Stheneli, dum agricolam imitatur, ad vix credibile miraculum perduxit, intra octavum annum $\overline{\text{CCCC}}$ nummum emptori addicta pendente
51 vindemia; cucurritque nemo non [2] ad spectandas uvarum in iis vineis strues, litteris eius altioribus contra id pigra vicinitate sibi patrocinante, et [3] novissime Annaeo Seneca, principe tum eruditorum ac

[1] indiligenti (*sc.* homini)? *Mayhoff.*
[2] *Gronovius*: non nemo.
[3] et *add. Rackham.*

[a] The elder Scipio Africanus retired voluntarily to his country seat at Liternum in 185 B.C. and died there a year or two later.

Sthenelus, a plebeian, the son of a freedman, by his intensive cultivation of a vineyard of not more than 60 iugera, in the region of Mentana, which he sold for 400,000 sesterces. Also Vetulenus Aegialus, he too a freedman, gained a great reputation in the district of Liternum in Campania, and a still greater reputation in public esteem on account of his cultivating the estate which had been the place of exile of Africanus[a]; but the greatest reputation, thanks to the activity of the same Sthenelus, attached to Remmius Palaemon, also famous for his treatise on grammar, who within the last 20 years bought a farm for 600,000 sesterces in the same region of Mentana, at the turning off the main road ten miles from Rome. The low price of property through all the districts just outside the city in every direction is notorious, but especially in the neighbourhood referred to, since Palaemon had bought farms that had also been let down by neglect and that were not above the average quality of soil even among those extremely poor estates. He undertook the cultivation of this property not from any high motive but at first out of vanity, for which he was known to be so remarkable; but he had the vineyards dug and trenched afresh under the superintendence of Sthenelus, and so, though only playing the part of a farmer, he finally got the estate into an almost incredibly wonderful condition, as within eight years, the vintage, while still hanging on the trees, was knocked down to a purchaser at a price of 400,000 sesterces; and everybody ran to see the piles of grapes in these vineyards, while the sluggish neighbourhood vindicated itself against this discredit by the excuse of his exceptionally profound studies, and recently Annaeus Seneca,

potentia quae postremo nimia ruit super ipsum, minime utique miratore inanium, tanto praedii huius amore capto ut non puderet inviso alias et ostentaturo tradere palmam eam, emptis quadriplicato vineis
52 illis intra decimum fere curae annum. digna opera quae in Caecubis Setinisque agris proficeret, quando et postea saepenumero septenos culleos singula iugera, hoc est amphoras centenas quadragenas, musti dedere. ac ne quis victam in hoc antiquitatem arbitretur, idem Cato denos culleos redire ex iugeribus scripsit, efficacibus exemplis non maria plus temerata conferre mercatori, non in Rubrum litus Indicumve merces petitas quam sedulum ruris larem.
53 VI. Vino antiquissima claritas Maroneo in Thraciae maritimae parte genito, ut auctor est Homerus. neque enim fabulosa aut de origine eius varie prodita consectemur,[1] praeterquam Aristaeum primum omnium in eadem gente mel miscuisse vino, suavitate praecipua utriusque naturae sponte provenientis. Maroneum vicies tanto addito aquae miscendum
54 Homerus prodidit. durat etiamnum vis in eadem

[1] *Warmington*: consectamur.

the most learned person of the day, and eminent in power which ultimately grew to excess and came crashing about his ears—a man who was at all events no admirer of frivolities—was seized with such a passionate desire for this estate that he was not ashamed to concede this victory to one whom he otherwise hated and who was sure to make the most of this advertisement, by buying the vineyards in question at four times the price Palaemon had paid for it within hardly more than ten years of its being under his management. This was a method of cultivation which it would be profitable to apply to the farms of Caecubum and Setia, since even subsequently the estate has frequently produced seven sacks, that is 140 jars, of must to the iugerum. And to prevent anyone from supposing that the records of the days of old were beaten on this occasion, Cato also wrote that there were returns of 10 sacks to the iugerum, these instances conclusively proving that the merchant does not obtain more profit by rashly trespassing on the seas nor by going as far as the coast of the Red Sea or of the Indian Ocean to seek for merchandise, than is yielded by a diligently cultivated homestead.

Famous wines of old times.

VI. The most ancient celebrity belongs to the wine of Maronea grown in the seaboard parts of Thrace, as we learn from Homer. However, we need not pursue the legendary or variously reported stories *Od.* IX. 197. concerning its origin, except the statement that Aristaeus was the first person of all in the same nation who mixed honey with wine, because of the outstandingly agreeable quality of each of these natural products. Homer has recorded the mixing of Maro- *Od.* IX. 209. nean wine with water in the proportion of 20 parts of water to one of wine. This class of wine in the same

terra generi rigorque indomitus, quippe cum Mucianus ter consul ex iis qui nuperrime prodidere sextarios singulos octonis aquae misceri compererit praesens in eo tractu, esse autem colore nigrum, odoratum, vetustate pinguescere.

Et Pramnio, quod idem Homerus celebravit, etiam nunc honos durat. nascitur Zmyrnae regione iuxta delubrum Matris deum.

55 In reliquis claritas generi non fuit alicui, anno fuit omnium generum bonitate L. Opimio cos., cum C. Gracchus tribunus plebem seditionibus agitans interemptus est: ea caeli temperies fulsit (cocturam vocant), solis opere, natali urbis DCXXXIII: durantque adhuc vina ea CC fere annis, iam in speciem redacta mellis asperi: etenim haec natura vinis in vetustate est; nec potari per se queant pervincive aqua, usque in amaritudinem carie indomita, sed ceteris vinis commendandis minima aliqua mixtura
56 medicamenta sunt. quod ut eius temporis aestimatione in singulas amphoras centeni nummi statuantur, ex his tamen [1] usura multiplicata semissibus,

[1] tantum *Mayhoff.*

district still retains its strength and its insuperable vigour, inasmuch as one of the most recent authors, Mucianus, who was three times consul, ascertained when actually visiting that region that it is the custom to mix with one pint of this wine eight pints of water, and that it is black in colour, has a strong bouquet, and improves in substance with age.

The Pramnian wine as well, also celebrated by Homer, still retains its fame. It is grown in the territory of Smyrna, in the neighbourhood of the shrine of the Mother of the Gods. *Il.* XI. 639, *Od.* X. 235.

Wines of exceptional age and value.

Among the remaining wines no kind was particularly famous, but the year of the consulship of Lucius Opimius, when the tribune Gaius Gracchus was assassinated for stirring up the common people with seditions, was renowned for the excellence of its vintages of all kinds—the weather was so fine and bright (they call it the 'boiling' of the grape) thanks to the power of the sun, in the 633rd year from the birth of the city; and wines of that year still survive, having kept for nearly 200 years, though they have now been reduced to the consistency of honey with a rough flavour, for such in fact is the nature of wines in their old age; and it would not be possible to drink them neat or to counteract them with water, as their over-ripeness predominates even to the point of bitterness, but with a very small admixture they serve as a seasoning for improving all other wines. Assuming that by the valuation of that period their cost may be put at 100 sesterces per amphora, but that the interest on this sum has been adding up at 6 per cent. per annum, which is a legal and moderate rate, we have shown by a famous instance that in the

121 B.C.

quae civilis ac modica est, in C. Caesaris Germanici filii principatu, annis CLX, singulas uncias vini eo[1] constitisse nobili exemplo docuimus referentes vitam Pomponii Secundi vatis cenamque quam principi illi dedit: tantum pecuniarum detinent vini apothe-
57 cae. nec alia res maius incrementum sentit ad vicensimum annum, maiusve ab eo dispendium non proficiente pretio. raro quippe adhuc fuere, nec nisi in nepotatu, singulis testis milia nummum. Viennenses soli picata sua, quorum genera diximus, pluris permutare, sed inter sese amore patrio, creduntur; idque vinum frigidius reliquis existimatur in frigido potu.

58 VII. Vino natura est hausto accendendi calore viscera intus, foris infuso refrigerandi. nec alienum fuerit commemorare hoc in loco quod Androcydes sapientia clarus ad Alexandrum Magnum scripsit intemperantiam eius cohibens: 'Vinum poturus, rex, memento bibere te sanguinem terrae. cicuta homini venenum est, cicutae vinum.' quibus praeceptis ille si obtemperavisset, profecto amicos in temulentia non interemisset, prorsus ut iure dici possit neque viribus corporis utilius aliud neque voluptatibus[2] perniciosius si modus absit.

[1] vini eo *Urlichs*: vini ex *aut* vineae.
[2] [voluptatibus] *Muretus*.

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[a] This work is not extant.
[b] *I.e.* in the case of a particular vintage, like Opimian, that is known to go on improving.
[c] Clitus and Callisthenes.
[d] *I.e.* in debasing them and in cutting them short: unless the word is an interpolation.

principate of Gaius Caesar, son of Germanicus, 160 A.D. 39. years after the consulship of Opimius, the wine cost that amount for one-twelfth of an amphora—this appears in our biography [a] of the bard Pomponius Secundus and the banquet that he gave to the emperor mentioned: so large are the sums of money that are kept stored in our wine-cellars! Indeed there is nothing else which experiences a greater increase of value up to the twentieth year—or a greater fall in value afterwards, supposing that there is not a rise of price.[b] Rarely indeed has it occurred hitherto and only in the case of some spendthrift's extravagance, for wine to fetch a thousand sesterces a cask. It is believed that the people of Vienne alone sell their wines flavoured with pitch, the varieties of which we have specified, for a higher § 18. price, though out of patriotism they only sell it among themselves; and this wine when drunk cold is believed to be cooler than all the other kinds.

VII. Wine has the property of heating the parts of *Physiological effect of wine.* the body inside when it is drunk and of cooling them when poured on them outside. And it will not be out of place to recall here what the famous philosopher Androcydes wrote to Alexander the Great in an attempt to restrain his intemperance: 'When you are about to drink wine, O King, remember that you are drinking the earth's blood. Hemlock is poison to a human being and wine is poison to hemlock.' If Alexander had obeyed this advice, doubtless he would not have killed his friends [c] in his drunken fits; so that in fact we are justified in saying that there is nothing else that is more useful for strengthening the body, and also nothing more detrimental to our pleasures [d] if moderation be lacking.

59 VIII. Genera autem vini alia aliis gratiora esse quis dubitet, aut non norit[1] ex eodem lacu aliud praestantius altero germanitatem praecedere sive testa sive fortuito eventu? quamobrem de principatu se
60 quisque iudicem statuet. Iulia Augusta LXXXVI[2] annos vitae Pucino vino rettulit acceptos, non alio usa. gignitur in sinu Hadriatici maris non procul a Timavi[3] fonte, saxoso colle, maritimo adflatu paucas coquente amphoras; nec aliud aptius medicamentis iudicatur. hoc esse crediderim quod Graeci celebrantes miris laudibus Praetutianum[4] appellaverint
61 ex Hadriatico sinu. Divus Augustus Setinum praetulit cunctis et fere secuti principes, confessa propter experimenta, non temere cruditatibus noxiis ab ea saliva nascentibus . . .[5] nascitur supra Forum Appi. antea Caecubo erat generositas celeberrima in palustribus populetis sinu Amyclano, quod iam intercidit incuria coloni locique angustia, magis tamen fossa Neronis quam a Baiano lacu Ostiam usque navigabilem incohaverat.

62 Secunda nobilitas Falerno agro erat et ex eo maxime Faustiano; cura culturaque id coegerat.[6]

[1] norit *add.* ? *Mayhoff.*
[2] LXXXVI *coll. Dione Cassio Nipperdey*: LXXXII.
[3] *Rackham*: Timavo.
[4] *Rackham coll.* §§ 67, 75: Praicianum, *etc.*
[5] nascentibus *add. Warmington, lacunam Rackham.*
[6] coegerat? *coll.* § 115 *Mayhoff*: collegerat.

[a] L. Cornelius Sulla Faustus, son of the dictator.

VIII. Who can doubt, however, that some kinds of wine are more agreeable than others, or who does not know that one of two wines from the same vat can be superior to the other, surpassing its relation either owing to its cask or from some accidental circumstance? And consequently each man will appoint himself judge of the question which wine heads the list. Julia Augusta gave the credit for her eighty-six years of life to the wine of Pizzino, having never drunk any other. It is grown on a bay of the Adriatic not far from the source of the Timavus, on a rocky hill, where the breeze off the sea ripens enough grapes to make a few casks; and no other wine is considered more suitable for medicinal purposes. I am inclined to believe that this is the wine from the Adriatic Gulf which the Greeks have extolled with such marvellous encomiums under the name of Praetutian. His late Majesty Augustus preferred Setinum to all wines whatsoever, and so for the most part did the Emperors who came after him, owing to the verdict of experience that because injurious attacks of indigestion do not readily arise from this liquor. . . . It grows just above Foro Appio. Previously Caecuban wine had the reputation of being the most generous of all; it was grown in some poplar woods on marshy ground on the Bay of Amyclae, but the vineyard has now disappeared owing to the neglect of the cultivator and the confined area of the ground, though in a greater degree owing to the ship canal from the lake of Baiae to Ostia that was begun by Nero.

Italian vintages in order of merit. First-class wines.

The second rank belonged to the Falernian district, and in it particularly to the estate of Faustus[a] in consequence of the care taken in its cultivation; but

Second-class wines.

exolescit haec quoque culpa [1] copiae potius quam bonitati studentium. Falernus ager a ponte Campano laeva petentibus Urbanam coloniam Sullanam nuper Capuae contributam incipit, Faustianus circiter IIII milia passuum a vico Caedicio, qui vicus a Sinuessa VI M. passuum abest. nec ulli nunc vino maior auctoritas. solum vinorum flamma accendi-
63 tur. tria eius genera, austerum, dulce, tenue. quidam ita distingunt, summis collibus Caucinum gigni, mediis Faustianum, imis Falernum. non omittendum autem nulli eorum quae celebrentur iucundum saporem uvae esse.

64 Ad tertiam palmam varie venere Albana urbi vicina,[2] praedulcia ac raro austera,[3] item Surrentina in vineis tantum nascentia, convalescentibus maxime probata propter tenuitatem salubritatemque. Tiberius Caesar dicebat consensisse medicos ut nobilitatem Surrentino darent, alioqui esse generosum acetum, C. Caesar, qui successit illi, nobilem vappam. certant Massica atque a monte Gauro Puteolos
65 Baiasque prospectantia. nam Falerno contermina Statana ad principatum venere non dubie, palamque fecere sua quibusque terris tempora esse, suos rerum

[1] culpa *add. Dalec.*
[2] urbi vicina *om. v.l.*
[3] raro austera? *Mayhoff*: rara in austero.

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[a] *I.e.* on palisades, not trained on trees.

the reputation of this district also is passing out of vogue through the fault of paying more attention to quantity than to quality. The Falernian district begins at the Campanian bridge as you turn left to reach the Colonia Urbana of Sulla lately attached to Capua, and the Faustus estate begins about four miles from the village of Caedicium, which is about six miles from Sinuessa. No other wine has a higher rank at the present day. It is the only wine that takes light when a flame is applied to it. It has three varieties, one dry, one sweet and one a light wine. Some people distinguish three vintages as follows—Caucinian growing on the tops of the hills, Faustian half-way up them, and Falernian at the bottom. It must also not be omitted that none of the grapes that produce the celebrated vintages are agreeable to eat.

Third-class wines. The third prize is attained in various degrees by the vines of Alba in the neighbourhood of the city, which are extremely sweet and occasionally dry, and also by those of Sorrento which only grow in vineyards,[a] and which are very highly recommended for convalescents because of their thinness and health-giving qualities. The Emperor Tiberius used to say that the doctors had made a corner to puff the Sorrento vintage, but that except for that it was only a generous vinegar, and his successor the Emperor Gaius called it best quality flat wine. Its place is contested by the vineyards of Monte Massico and the slopes of Monte Barbaro looking towards Pozzuoli and Baiae. For the Statana vineyards adjoining the Falernian territory unquestionably once reached the first place, and established the fact that each locality has its own period and its own rise and decline of

proventus occasusque. iuncta iis praeponi solebant Calena et quae in vineis arbustisque nascuntur Fundana et alia ex vicinia urbis, Veliterna, Privernatia. nam quod Signiae nascitur austeritate nimia continendae utile alvo inter medicamina numeratur.

66 Quartum curriculum publicis epulis optinuere a divo Iulio—is enim primus auctoritatem iis dedit, ut epistulis eius apparet—Mamertina circa Messanam in Sicilia genita; ex his Potitiana[1] ab auctore dicta illo cognomine, proxima Italiae laudantur praecipue. est in eadem Sicilia et Tauromenitanis honos lagoenis pro Mamertino plerumque subditis.

67 Ex reliquis autem a supero mari Praetutiana[2] atque Anconae nascentia, et quae a palma una forte enata palmensia appellavere, in mediterraneo vero Caesenatia ac Maecenatiana, in Veroniensi item Raetica Falernis tantum postlata a Vergilio, mox ab intimo sinu maris Hadriana, ab infero autem Latiniensia,
68 Graviscana, Statoniensia. Etruriae Luna palmam habet, Liguriae Genua. inter Pyrenaeum Alpesque Massilia gemino sapore, quando et condiendis aliis

[1] *Dalec. coll.* § 69: Potulana.
[2] *Rackham coll.* § 75: Praetutia.

[a] The Tuscan Sea.

fortune. The adjacent vintages of the Calenian hills used to be preferred to them, as were those of Fundi where the vines are grown on trellises or trained up small trees, and others from the vicinity of Rome, those of Castel del Volturno and Piperno. As for the wine produced at Segni, it counts as a medicine, being useful as a stomachic astringent owing to its excessive dryness.

For public banquets the fourth place in the race has been held from the time of his late Majesty Julius Caesar onward—for he was the first person to bring them into favour, as appears from his letters—to the Mamertine vintages grown in the neighbourhood of Messina in Sicily; of these the Potitian, so called after the name of its original grower, is particularly highly spoken of—it grows in the part of Sicily nearest to Italy. In Sicily also is grown the Taormina vintage, which when bottled is constantly passed off for Mamertine. *Fourth-class wines.*

Among the remaining wines there are, in the vicinity of the Adriatic and Ionian Sea, the Praetutian and those grown at Ancona and the vines called sprig-vines, because they were all struck from a single chance sprig; and in the interior the wines of Cezena and those called by the name of Maecenas; also in the district of Verona the wines of Tyrol, reckoned by Virgil inferior only to Falernian: and next at the top of the Adriatic the wines of Adria, and from the Lower Sea[a] the Latiniensian, Graviscan and Statoniensian. Luna carries off the palm of Tuscany and Genoa that of Liguria. Between the Pyrenees and the Alps Marseilles has wine of two flavours, as it produces a richer variety, the local name for which is the 'juicy' brand, which is also used for *Georgics II. 95.*

pinguius gignit quod vocat sucosum. Baeterrarum intra Gallias consistit auctoritas; de reliquis in Narbonensi genitis adseverare non est, quoniam officinam eius rei fecere tinguentes fumo, utinamque non et herbis ac medicaminibus noxiis: quippe etiam aloe mercator saporem coloremque adulterat.

69 Verum et longinquiora Italiae ab Ausonio mari non carent gloria, Tarentina et Servitiana et Consentiae genita et Tempsae ac Bari ac[1] Lucana quae antecedunt[2] Thurinis. omnium vero eorum maxime illustrata Messalae Potiti salute Lagarina, non procul Grumento nascentia. Campania nuper excitavit novis nominibus auctoritatem sive cura sive casu, ad quartum a Neapoli lapidem Trebellicis, iuxta Capuam Caulinis, et in suo agro Trebulanis, alioqui semper inter

70 plebeia, et Trifolinis gloriata. nam Pompeianis summum decem annorum incrementum est, nihil senecta conferente; dolore etiam capitum in sextam horam diei sequentis infesta deprehenduntur. quibus exemplis, nisi fallor, manifestum est patriam terramque referre, non uvam, et supervacuam generum consectationem in numerum, cum eadem vitis aliud

[1] ac Bari ac *Detlefsen* (Calabriae *Mayhoff*): ac Babbiae.
[2] *Detlefsen*: Lucanaque antecedentibus.

seasoning other wines. The importance of the wine of Beziers does not extend outside the Gallic provinces; and about the rest of the wines grown in the Province of Narbonne no positive statement can be made, inasmuch as the dealers have set up a regular factory for the purpose and colour them by means of smoke, and I regret to say also by employing noxious herbs and drugs—inasmuch as a dealer actually uses aloe for adulterating the flavour and the colour of his wines.

But also the wines of Italy grown further away from the Ausonian Sea are not without note, those of Taranto and San Severino, and those grown at Cosenza and Tempsa and Bari, and the Lucanian vintages, which hold a better place than those of Thurii. But the wines of Lagara, grown not far from Grumentum, are the most famous of them all, on the ground of their having restored the health of Messala Potitius. Campania, whether by means of careful cultivation or by accident, has lately excited consideration by some new names—boasting the Trebellian vintage four miles from Naples, the Cauline close to Capua, and the Trebulan when grown in the district of the same name (though otherwise it is always classed as a common wine), and the Trifoline. As for the wines of Pompei, their topmost improvement is a matter of ten years, and they gain nothing from age; also they are detected as unwholesome because of a headache which lasts till noon on the following day. These instances, if I am not mistaken, go to show that it is the country and the soil that matter, not the grape, and that it is superfluous to go on with a long enumeration of kinds, since the same vine has a different value in different

71 aliis in locis polleat. Hispaniarum Laeetana copia nobilitantur, elegantia vero Tarraconensia atque Lauronensia et Baliarica ex insulis conferuntur Italiae primis. nec ignoro multa praetermissa plerosque existimaturos, quando suum cuique placet et quo-
72 cumque eatur, fabula eadem reperitur, divi Augusti iudiciorum ac palati peritissimum e libertis censuram vini in epulas eius facientem dixisse hospiti de indigena vino novum quidem sibi gustum esse eum atque non ex nobilibus, sed Caesarem non aliud poturum. nec negaverim et alia digna esse fama, sed de quibus consensus aevi iudicaverit haec sunt.

73 IX. Nunc simili modo transmarina dicemus. in summa gloria post Homerica illa de quibus supra diximus fuere Thasium Chiumque, ex Chio quod Ariusium vocant. his addidit Lesbium Erasistrati maximi medici auctoritas, circiter CCCCL anno urbis Romae. nunc gratia ante omnia est Clazomenio,
74 postquam parcius mari condiunt. Lesbium sponte

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[a] 304 B.C.

places. In the Spanish provinces the vineyards of Laeetanum are famous for the quantity of wine they produce, while for choice quality the vineyards of Tarragon and Lauron and those of the Balearics among the islands challenge comparison with the first vintages of Italy. And I am not unaware that most people will think that many have been passed over, inasmuch as everybody has his own favourite, and wherever one may go one finds the same story current—how that one of the freedmen of his late Majesty Augustus, who was the most skilful among them for his judgement and palate, in tasting wine for the emperor's table passed this remark to the master of the house where Augustus was visiting in regard to a wine of the district: 'The flavour of this wine is new to me, and it is not of a high class, but all the same I prophesy that the emperor will not drink any other.' I would not deny that other wines also deserve a high reputation, but the ones that I have enumerated are those on which the general agreement of the ages will be found to have pronounced judgement.

IX. We will now in a similar manner specify the wines of countries overseas. The wines held in highest esteem subsequent to the great vintages of the Homeric age about which we have spoken above were those of Thasos and Chios, and of the latter the wine called Ariusian. To these the authority of the eminent physician Erasistratus, about four hundred and fifty years [a] after the foundation of Rome, added Lesbian. At the present time the most popular of all is the wine of Clazomenae, now that they have begun to flavour it more sparingly with sea-water. The wine of Lesbos by dint of its own

Foreign wines classified.

§§ 53 foll.

suae naturae mare sapit; nec Tmoliti per se gratia
ut vino, sed cuius dulci admixto reliquorum duritia
suavitatem accipiat, simul et aetatem, quoniam
vetustiora protinus videntur. ab his dignatio est
Sicyonio, Cyprio, Telmesico, Tripolitico, Berytio,
Tyrio, Sebennytico. in Aegypto hoc nascitur tribus
generibus uvarum ibi nobilibus,[1] Thasio, aethalo,
75 peuce. post haec auctoritas Hippodamantio, Mystico,
cantharitae, protropo Cnidio, Catacecaumenitae,
Petritae, Myconio. nam Mesogiten capitis dolores
facere conpertum est, nec Ephesium salubre esse,
quoniam mari et defruto condiatur. Apamenum
mulso praecipue convenire dicitur, sicut Praetutia-
num [2] in Italia—est enim et haec proprietas generum;
76 dulcia utique inter se non congruunt. exolevit et pro-
tagion, quod Italicis proximum fecerant Asclepiadis
scholae. Apollodorus medicus in volumine quo
suasit Ptolemaeo regi quae vina biberet Italicis
etiam tum ignotis laudavit in Ponto Nasperceniten,
mox Oreticum, Oeneaten, Leucadium, Ambracioten
et quod cunctis praetulit Peparethium, sed minoris
famae esse dixit quoniam ante sex annos non placeret.

[1] nobilibus? *Mayhoff*: nobilis (nobilissimis *edd.*).
[2] *Rackham coll.* 67: Praetuitium.

nature smacks of the sea; and that of Mount Tmolus also is not esteemed as a wine to drink neat, but because being a sweet wine an admixture of it gives sweetness to the dry quality of the remaining vintages, at the same time also giving them age, as it at once makes them seem more mature. Next after these in esteem are the wines of Sicyon, Cyprus, Telmesus, Tripoli, Beyrout, Tyre and Sebennys. This last is grown in Egypt, being made from three famous kinds of grapes that grow there, the Thasian, the soot-grape and the pine-tree grape. Ranking after these are the wines of Hippodamas, of Mystus and of the canthareos vine, the protropum[a] of Cnidos, and the wines of the volcanic region in Mysia, of Petra and of Myconos. As for the vintage of Mesogis, it has been found to cause headache, and that of Ephesus has also proved to be unwholesome, because sea-water and boiled must are employed to season it. Apamea wine is said to be particularly suitable for making mead, and so likewise is the Praetutian in Italy—for this too is a property peculiar to certain kinds of wine: two sweet wines do not generally go well together. Protagion also has quite gone out, a wine which the medical profession had put next to those of Italy. The physician Apollodorus in his pamphlet advising King Ptolemy what wines to drink—the Italian vintages being even then unknown—praised the wine of Naspercene in Pontus, and next to it the Oretic, Oeneate, Leucadian, Ambraciote and Peparethian vintages—the last he put before all the rest, but said it was less well thought of on account of its not being fit to drink before it was six years old.

[a] A sweet wine drawn off before treading (τραπῶ) the grapes.

77 X. Hactenus bonitas vini nationibus debetur. apud Graecos iure[1] clarissimum nomen accepit quod appellaverunt bion, ad plurimos valitudinum usus excogitatum, ut docebimus in parte medicinae. fit autem hoc modo: uvae paulum ante maturitatem decerptae siccantur acri sole, ter die versatae per triduum, quarto exprimuntur, dein in cadis sole in-
78 veterantur. Coi marinam aquam largiorem miscent a servi furto origine orta sic mensuram explentis, idque translatum in album mustum leucocoum appellatur. in aliis autem gentibus simili modo factum tethalassomenon vocant, thalassiten autem vasis musti deiectis in mare, quo genere praecox fit
79 vetustas. nec non apud nos quoque Coum vinum ex Italico faciendi rationem Cato demonstravit, super cetera in sole quadriennio[2] maturandum praecipiens. Rhodium Coo simile est, Phorineum salsius Coo. omnia transmarina vina septem annis ad vetustatem mediam pervenire existimantur.

80 XI. Vinum omne dulce minus odoratum, quo tenuius eo odoratius. colores vinis quattuor albus, fulvus, sanguineus, niger. psithium et melampsithium passi genera sunt suo sapore, non vini, Scybelites vero mulsi in Galatia nascens, et Aluntium in

[1] *V.l.* curae: cura *Hardouin.*
[2] quadriduo *aut* triduo *edd.*

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[a] Possibly the text should be altered to give 'four' or 'three days.'

X. Up to this point the goodness of a wine is credited to the countries of its growth. Among the Greeks, the wine they have called 'life' has justly won a very distinguished name, having been developed for the treatment of a great many maladies, as we shall show in the part of our work dealing with medicine. The process of making it is this: the grapes are picked a little before they are ripe and are dried in a fierce sun, being turned three times a day for three days, and on the fourth day they are put through the press and then left in casks to mature in the sun. The people of Cos mix in a rather large quantity of sea-water—a custom arising from the peculation of a slave who used this method to fill up the due measure, and this mixture is poured into white must, producing what is called in Greek 'white Coan.' In other countries a blend made in a similar way is called 'sea-flavoured wine,' and 'sea-treated' when the vessels containing the must have been thrown into the sea; this is a kind of wine that matures young. Also with us as well Cato exhibited a method of making Coan wine out of Italian, his most important instruction being that it must be left in the sun for four years[a] to ripen. The Rhodes vintage resembles that of Cos, but the Phorinean is salter. All the overseas wines are thought to take seven years to reach the middle stage of maturity.

A medicinal Greek wine.

XXIII. 53.

R.R. CXII.

XI. All sweet wine has less aroma; the thinner a wine is the more aroma it has. Wines are of four colours, white, brown, blood-red and black. Psithian and black psithian are kinds of raisin-wine with a peculiar flavour which is not that of wine; Scybelites is a kind of must produced in Galatia, and Aluntium

Aroma and colour of wines.

Raisin-wine.

Sicilia. nam siraeum, quod alii hepsema, nostri sapam appellant, ingenii, non naturae opus est musto usque ad tertiam mensurae decocto; quod ubi factum ad dimidiam est, defrutum vocatur. omnia in adulterium mellis excogitata; sed priora uva terraque constant.
81 passum a Cretico [1] Cilicium probatur et Africum. id [2] in Italia finitimisque provinciis fieri certum est ex uva quam Graeci psithiam vocant, nos apianam, item scripulam, diutius uvis [3] in vite sole adustis aut ferventi oleo.[4] quidam ex quacumque dulci, dum praecocta, alba, faciunt siccantes sole donec paulo amplius dimidium pondus supersit, tunsasque leniter
82 exprimunt. dein quantum expressere adiciunt vinaceis aquae puteanae, ut et secundarium passum faciant. diligentiores eodem modo siccatis acinos eximunt ac sine sarmentis madefactos vino excellenti donec intumescant premunt—et hoc genus ante cetera laudant; ac simili modo aqua addita secundarium faciunt.

83 Medium inter dulcia vinumque est quod Graeci aigleucos vocant, hoc est semper mustum. id evenit cura, quoniam fervere prohibetur—sic appellant musti in vina transitum. ergo mergunt e lacu

[1] *Hermolaus e Diosc.*: Graeco.
[2] *Detlefsen*: et.
[3] uvis *add. Sillig.*
[4] *V.l.* dolio.

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[a] *Apiana*, lit. 'beloved by bees'; perhaps also the English (and Italian) name, though derived from 'musk,' a word of Arabic origin, was popularly associated with *musca*, 'fly.'
[b] *I.e.* ferment or effervesce.

another, produced in Sicily. Siraeum, by some called hepsema and in our country sapa, is a product of art, not of nature, made by boiling down must to a third of its quantity; must boiled down to only one-half is called defrutum. All these wines have been devised for adulterating with honey; but the wines previously mentioned are the product of the grape and of the soil. Next after the raisin-wine of Crete those of Cilicia and of Africa are held in esteem. Raisin-wine is known to be made in Italy and in the neighbouring provinces from the grape called by the Greeks psithia and by us 'muscatel,' [a] and also scripula, the grapes being left on the vine longer than usual to ripen in the sun, or else being ripened in boiling oil. Some people make this wine from any sweet white grape that ripens early, drying them in the sun till little more than half their weight remains, and then they beat them and gently press out the juice. Afterwards they add to the skins the same quantity of well-water as they have pressed out juice, so as also to make raisin-wine of second quality. The more careful makers, after drying the bunches in the same manner, pick off the berries and soak them without their stalks in wine of good quality till they swell, and then press them—and this kind of wine is the most highly praised of any; and then they repeat the process, adding more water, and make a wine of second quality.

Between the sirops and real wine is the liquor that the Greeks call aigleucos—this is our 'permanent must.' Care is needed for its production, as it must not be allowed to 'boil' [b]—that is the word they use to denote the passage of must into wine. Consequently, as soon as the must is taken from the vat and put into *Must.* *Sweet wines.*

protinus in aqua cados donec bruma transeat et consuetudo fiat algendi. est etiamnum aliud genus passi, quod vocat dulce Narbonensis provincia et in ea maxime Vocontii. adservatur eius gratia uva
84 diutius in vite pediculo intorto. ab aliis ipse palmes inciditur ad medullam, ab aliis uva torretur in tegulis, omnia ex helvennaca vite. his adiciunt aliqui quod vocant diachyton uvis in sole siccatis loco cluso per dies septem in cratibus totidem pedes a terra alte, noctibus ab umore defensis, octavo die calcatis; ita
85 fieri optimi odoris saporisque. e dulci genere est et melitites; distat a mulso quod fit e musto cum quinque congiis; austeri musti congio mellis et salis cyatho subfervefactis, austerum. sed inter haec genera poni debet et protropum: ita appellatur a quibusdam mustum sponte defluens antequam calcentur uvae. hoc protinus diffusum in lagoenis suis defervere passi, postea in sole XL diebus torrent aestatis secutae, ipso canis ortu.

86 XII. Non possunt iure dici vina quae Graeci deuteria appellant, Cato et nos loram, maceratis aqua vinaceis,

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[a] See § 75, note.

casks, they plunge the casks in water till midwinter passes and regular cold weather sets in. There is moreover another kind of raisin-wine known in the Province of Narbonne, and there particularly to the Vocontii, under the name of 'sweet wine.' For the purpose of this they keep the grape hanging on the vine for an exceptional time, with the foot-stalk twisted. Some make an incision in the actual shoot as far as the pith and others leave the grapes to dry on tiled roofs, the grapes in all cases being those from the helvennaca vine. To these some add a wine called in Greek 'strained wine,' to make which the grapes are dried in the sun for seven days raised seven feet from the ground on hurdles, in an enclosed place where at night they are protected from damp; on the eighth day they are trodden out, and this process produces a wine of extremely good bouquet and flavour. Another wine of the sweet class is called honey-wine; it differs from mead because it is made from must, in the proportion of thirty pints of must of a dry quality to six pints of honey and a cup of salt, this mixture being brought just to the boil; this produces a dry-flavoured liquor. But among these varieties ought also to be placed the liquor called in Greek *protropum*,[a] the name given by some people to must that flows down of its own accord before the grapes are trodden. This as soon as it flows is put into special flagons and allowed to ferment, and afterwards left to dry for forty days of the summer that follows, just at the rise of the Dog-star.

XII. The liquors made from grape-skins soaked in water, called by the Greeks seconds and by Cato and ourselves after-wine, cannot rightly be styled wines, *After-wines.*

sed tamen inter vina operaria numerantur. tria eorum genera: decuma parte aquae addita quam quae musti expressa sit, et ita nocte ac die madefactis vinaceis rursusque prelo subiectis; alterum, quomodo Graeci factitavere, tertia parte eius quod expressum sit addita aquae expressoque decocto ad tertias partes; tertium est faecibus vini expressum, quod faecatum Cato appellat: nullum ex his plus quam annui usus.

87 XIII. Verum inter haec subit mentem, cum sint genera nobilia quae proprie vini intellegi possint LXXX fere in toto orbe, duas partes ex hoc numero Italiae esse, longe propterea[1] ante cunctas terras; et hinc deinde altius cura serpit, non a primordio hanc gratiam fuisse, auctoritatem post DC urbis
88 annum coepisse. XIV. Romulum lacte, non vino, libasse indicio sunt sacra ab eo instituta quae hodie custodiunt morem. Numae regis Postumia lex est: *Vino rogum ne respargito*, quod sanxisse illum propter inopiam rei nemo dubitet. eadem lege ex inputata

[1] *V.l.* praeterea longe.

but nevertheless are counted among the wines of the working classes. They are of three kinds: one is made by adding to the skins water to the amount of a tenth of the quantity of must that has been pressed out, and so leaving the skins to soak for twenty-four hours and then again putting them under the press; another, by a method of manufacture that has been commonly employed by the Greeks, *i.e.* by adding water to the amount of a third of the juice that has been pressed out, and after submitting the pulp to pressure, boiling it down to one-third of its original quantity; while the third kind is pressed out of the wine-lees—Cato's name for this is 'lees-wine.' None of these liquors is drinkable if kept more than a year.

Wines of quality, chiefly Italian and recent.

XIII. Among these topics, however, it occurs to me that while there are in the whole world about eighty notable kinds of liquor that can properly be understood as coming under the term 'wine,' two-thirds of this number belong to Italy, which stands far in front of all the countries in the world on that account; and further investigation going into this subject more deeply indicates that this popularity does not date back from the earliest times, but that the importance of the Italian wines only began from the city's six hundredth year. 154 B.C. XIV. Romulus used milk and not wine for libations, as is proved by the religious rites established by him which preserve the custom at the present day. The Postumian Law of King Numa runs: *Thou shalt not sprinkle the funeral pyre with wine*—a law to which he gave his sanction on account of the scarcity of the commodity in question, as nobody can doubt. By the same law he made it illegal to offer libations to the

Regulations for use of wine in former days.

vite libari vina dis nefas statuit, ratione excogitata
ut putare cogerentur alias aratores et pigri circa
pericula arbusti. M. Varro auctor est Mezentium
Etruriae regem auxilium Rutulis contra Latinos
tulisse vini mercede quod tum in Latino agro fuisset.
89 non licebat id feminis Romae bibere. invenimus
inter exempla Egnati Maetenni uxorem, quod
vinum bibisset e dolio, interfectam fusti a marito,
eumque caedis a Romulo absolutum. Fabius Pictor
in annalibus suis scripsit matronam, quod loculos in
quibus erant claves cellae vinariae resignavisset, a
90 suis inedia mori coactam, Cato ideo propinquos
feminis osculum dare ut scirent an temetum olerent:
hoc tum nomen vino erat, unde et temulentia
appellata. Cn. Domitius iudex pronuntiavit mu-
lierem videri plus vini bibisse quam valitudinis causa
viro insciente, et dote multavit. diuque eius rei
91 magna parsimonia fuit. L. Papirius imperator
adversus Samnites dimicaturus votum fecit, si vi-
cisset, Iovi pocillum vini. denique inter dona
sextarios lactis[1] datos invenimus, nusquam vini.
idem Cato cum in Hispaniam navigaret, unde cum
triumpho rediit, non aliud vinum bibit quam remiges,

[1] lactis *add. edd.*

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[a] A plantation of trees on which vines were trained.

[b] Lucius Papirius Cursor in 320 B.C. retrieved the disaster of the preceding year when the Roman army was entrapped at the Caudine Forks.

[c] Over the Celtiberi, 195 B.C.

gods with wine produced from a vine that had not been pruned, this being a plan devised for the purpose of compelling people who were mainly engaged in agriculture, and were slack about the dangers besetting a plantation,[a] not to neglect pruning. We learn from Marcus Varro that Mezentius, king of Etruria, gave help to the Rutuli against the Latins at the price of receiving all the wine then in the territory of Latium. At Rome women were not allowed to drink wine. Among various instances we find that the wife of Egnatius Maetennus was clubbed to death by her husband for drinking wine from the vat, and that Romulus acquitted him on the charge of murder. Fabius Pictor has written in his *Annals* that a matron was starved to death by her relatives for having broken open the casket containing the keys of the wine-cellar; and Cato says that the reason why women are kissed by their male relations is to know whether they smell of 'tipple'—that was then the word denoting wine, and also the word 'tipsy' comes from it. Judge Gnaeus Domitius once gave a verdict that a certain woman appeared to have drunk more wine that was required for the sake of her health without her husband's knowledge, and he fined her the amount of her dowry. And great economy in the use of this commodity prevailed for a long time. General Lucius Papirius[b] before his decisive action against the Samnites vowed to give a small goblet of wine to Jupiter if he were victorious. Lastly among votive offerings we find mention of gifts of pints of milk but nowhere of wine. Moreover Cato, when sailing on his expedition to Spain, whence he returned with a triumph,[c] drank no other wine than what was drunk by the crew of his galley, so little did he

in tantum dissimilis istis qui etiam convivis alia quam sibimet ipsis ministrant aut procedente mensa subiciunt.

92 XV. Lautissima apud priscos vina erant myrrhae odore condita, ut apparet in Plauti fabulis, quamquam in ea quae Persa inscribitur[1] et calamum addi iubet. ideo quidam aromatite delectatos maxime credunt; sed Fabius Dossennus his versibus decernit:

Mittebam vinum pulchrum, murrinam,

et in Acharistione:

Panem et polentam, vinum murrinam.

93 Scaevolam quoque et L. Aelium et Ateium Capitonem in eadem sententia fuisse video, quoniam in Pseudolo sit:

Quod si opus est ut dulce promat indidem, ecquid habet?—Rogas?
Murrinam, passum, defrutum, mella—

quibus apparet non inter vina modo murrinam, sed inter dulcia quoque nominatum.

94 XVI. Apothecas fuisse et diffundi solita vina anno DCXXXIII urbis apparet indubitato Opimiani vini argumento, iam intellegente suum bonum Italia. nondum tamen ista genera in claritate erant; itaque omnia tunc genita unum habent consulis
95 nomen. sic quoque postea diu transmarina in

[1] *Schöll*: Plauti fabula quae Persa inscribitur quamquam in ea.

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[a] In *Persa* 87–88 there is a recipe for compounding *mulsum* (not for flavouring wine) which gives *calamus* as one ingredient, but there is no mention of myrrh.

[b] Plautus, *Pseud.* 740–741.

[c] Opimius.

resemble the gentlemen who give even their guests other wines than those served to themselves, or else substitute inferior wines as the meal progresses.

Spiced wine. XV. The finest wines in early days were those spiced with scent of myrrh, as appears in the plays of Plautus, although in the one entitled *The Persian* he recommends the addition of sweet-reed also.[a] Consequently some think that in old times people were extremely fond of scented wine; but Fabius Dossennus decides the point in these verses:

I sent them a fine wine, one spiced with myrrh,

and in his *Acharistio*:

Bread and pearl-barley and wine spiced with myrrh.

I also observe that Scaevola and Lucius Aelius and Ateius Capito were of the same opinion, inasmuch as we find in *Pseudolus*[b]:

A. But if he has to bring out a sweet wine
From that same cellar, has he got one?
B. Got one?
Myrrh-wine and raisin-wine and boiled-down must
And honey—

which shows that myrrh-wine was counted not only among wines but also among sirops.

Italian and imported wines. XVI. The existence of the Opimian wine—Italy already understanding the blessing she enjoyed—affords an undoubted proof that wine-lofts existed there and it was usual for wine to be racked off in the 633rd year of the city. Nevertheless the 21 B.C.
vintages referred to were not yet celebrated; and accordingly all the wines grown in that year bear the name of the consul only.[c] Similarly also afterwards wines imported from oversea held the field for

auctoritate fuerunt et ad avos usque nostros, quin et Falerno iam reperto, sicut apparet ex illo comici[1] versu:

Quinque Thasi vini depromam, bina Falerni.

P. Licinius Crassus L. Iulius Caesar censores anno urbis conditae DCLXV edixerunt, *ne quis vinum Graecum Aminniumque pluris*[2] *octonis aeris singula quadrantalia venderet:* haec enim verba sunt. tanta vero Graeco vino gratia erat ut singulae potiones in convictu
96 darentur. XVII. Quibus vinis auctoritas fuerit sua iuventa,[3] M. Varro his verbis tradit: *L. Lucullus puer apud patrem numquam lautum convivium vidit in quo plus semel Graecum vinum daretur: ipse cum rediit ex Asia, milia cadum congiariorum divisit amplius centum. C. Sentius, quem praetorem vidimus, Chium vinum suam domum inlatum dicebat tum primum cum sibi cardiaco medicus dedisset: Hortensius super* $\bar{\text{x}}$ *cadum heredi reli-*
97 *quit.* hactenus Varro. quid? non et Caesar dictator triumphi sui cena vini Falerni amphoras, Chii cados in convivia distribuit? idem Hispaniensi triumpho Chium et Falernum dedit, epulo vero in tertio consulatu suo Falernum, Chium, Lesbium, Mamertinum, quo tempore primum quattuor genera vini adposita

[1] *V.l.* comico.
[2] pluris *add. Rackham.*
[3] *Mayhoff*: sua in mensa.

a long time and right down to our grandfathers' day, indeed even after Falernian had already been discovered, as appears from the line of the comedy playwright[a]:

> I'll broach five casks of Thasian, two of Falernian.

In the year 665 from the foundation of the city the censors Publius Licinius Crassus and Lucius Julius Caesar promulgated an edict prohibiting 'the sale of Greek and Aminnian wine at a higher price than 8 *asses* for 6 gallons'—those being the actual words of the edict. But Greek wine was so highly esteemed that only one cup was given to each guest at a banquet. XVII. Marcus Varro records in the following words the wines that ranked highest in his own younger days: 'When Lucius Lucullus was a boy he never saw a full-dress banquet in his father's house at which Greek wine was given more than once, but when he himself came back from Asia he distributed more than 100,000 jars in largess; also Gaius Sentius, who was praetor in our time, used to say that the first time that Chian wine entered his house was when the doctor had prescribed it for him for heartburn; but Hortensius left over ten thousand jars to his next-of-kin.' So far Varro. And besides, did not Caesar also, when dictator, at the banquet in celebration of his triumph apportion to each table a flagon of Falernian and a jar of Chian? Caesar also gave Chian and Falernian at his triumph over Spain, but at a banquet during his third consulship he provided Falernian, Chian, Lesbian and Mamertine: this is known to be the first occasion on which four

89 B.C.

Imported Greek wines.

80 B.C.

50 B.C.

46 B.C.

60 B.C.

46 B.C.

[a] Unknown.

constat. postea ergo reliqua omnia in nobilitatem venere et circiter DCC urbis annum.

98 XVIII. Itaque non miror innumerabilia paene genera ficticii reperta multis ante saeculis, quae nunc dicemus, omnia ad medicinae usum pertinentia. omphacium quo modo fieret propter unguenta diximus priore libro. fit e labrusca, hoc est vite silvestri, quod vocatur oenanthinum, floris eius libris duabus in musti cado maceratis; post dies XXX mutantur. praeter hoc radix labruscae et acini coria perficiunt.
99 hi paulo post quam defloruere singulare remedium habent ad refrigerandos in morbis corporum ardores, gelidissima, ut ferunt, natura. pars eorum aestu moritur prius quam reliqua, qui solstitiales dicuntur; universi numquam maturescunt, et si prius quam tota marcescat uva incocta detur cibo gallinaceo generi, fastidium gignit uvas adpetendi.

100 XIX. Ficticiorum primum (quod vocant adynamon) fit ex ipso vino[1] hoc modo: albi musti sextarii XX aquae dimidium fervent donec excoquatur aquae mensura. alii marinae sextarios X, tantundem pluviae in sole XL diebus torrent. dant aegris quibus vini noxiam timent.

[1] fit . . . vino *hic Warmington*: *ante* quod vocant.

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[a] If the text is right, Pliny must mean that vintages other than Chian and Falernian became famous after the latter did.

kinds of wine were served. It follows that all the rest of the vintages came into fame afterwards, and about 54 B.C.[a]

XVIII. I am not surprised therefore that many *Artificial wines.* centuries ago almost innumerable kinds of artificial wine have been invented, which we will now specify, all of them being used for medicinal purposes. In an earlier volume we stated the method of making XII. 130. omphacium, which is used for unguents. What is called vine-flower wine is made from the claret vine, that is the wild vine, by steeping two pounds of the flowers of this plant in a jar of must; 30 days afterwards they are changed. Beside this the root and the grape-skins of the claret-vine are used in dressing leather. These grape-skins, a little after the blossom has gone off, provide a remarkable specific for cooling attacks of feverish heat in cases of disease, being said to be of an extremely cold nature. A portion of these grapes die off from the heat before the rest—these are called midsummer grapes; the whole of them never come to maturity, and if a bunch in an unripe state before it completely withers is fed to poultry it produces in them a distaste for stealing grapes.

XIX. The first of the artificial wines, which is called *Manufacture of 'weak wine.'* weak wine, is made from real wine in the following manner: ten quarts of white must and half that quantity of water are kept boiling till a considerable amount of the water is boiled away. Other people put in five quarts of sea-water and the same amount of rain-water and leave the mixture in the sun for 40 days to evaporate. This drink is given to invalids for whom it is feared that wine may be harmful.

101 Proximum fit e milii semine maturi cum ipsa
stipula libram quadrantem in congios duos musti
macerato et post septimum mensem transfuso. ex
loto arbore, frutice, herba dictum est ubi quaeque
fierent.

102 Fiunt et e pomis quae dicemus interpretationibus
non nisi necessariis additis, primumque e palmis, quo
Parthi, Indi utuntur et oriens totus, mitiorum quas
vocant chydaeas modio in aquae congiis tribus
macerato expressoque. sic fit et sycites e fico, quem
alii pharnuprium, alii trochin vocant; aut si dulce
esse non libeat, pro aqua tantundem vinaciorum
adicitur. e Cypria fico et acetum fit praecellens
103 atque Alexandrino quoque melius. vinum fit et e
siliqua Syriaca et e piris malorumque omnibus
generibus—sed e Punicis rhoiten vocant—et e
cornis, mespilis, sorbis, moris siccis, nucleis pineis;
hi musto madidi exprimuntur, superiora per se
104 mitia. myrtiten Cato quemadmodum fieri docuerit
mox paulo indicabimus. Graeci et alio modo:
ramis teneris cum suis foliis in salso musto decoctis,
tunsis, libram in tribus musti congiis defervefaciunt
donec duo supersint. quod ita e silvestris myrti

[a] Ῥόα, 'pomegranate.'

The next kind of artificial wine is made from ripe millet seed, by putting a pound and a quarter of the seed together with its straw to soak in $1\frac{1}{2}$ gallons of must and after an interval of seven months pouring off the liquor. It has already been stated where the varieties brewed from the lotus-tree, lotus-shrub and herbaceous lotus are made. *Millet wine.* XIII. 106 *sq.*

There are also wines, made from fruit, which we will specify, adding only the indispensable explanations: First the wine made from date-palms, which is used by the Parthians and Indians and by the whole of the East, a peck of the rather soft dates called in Greek 'common dates' being soaked in two and a quarter gallons of water and then pressed. Also fig syrup is made from figs by a similar process, other names for it being pharnuprium and trochis; or if it is not wanted to be sweet, instead of water is added the same quantity of grape-skin juice. Also excellent vinegar is made from the Cyprus fig, and an even better quality as well from that of Alexandria. Wine is also made from the Syrian carob, and from pears and all kinds of apples (one from pomegranates is called rhoites [a]) as also from cornels, medlars, service berries, dried mulberries and fir-cones; the last are soaked in must before being pressed, but the juice of the preceding fruits is sweet of itself. We will indicate a little later instructions given by Cato as to how to make myrtle-syrup. The Greeks also employ another method: they boil tender sprigs of myrtle with the leaves on in salted must, and after pounding them boil down one pound of the mixture in $2\frac{1}{4}$ gallons of must until only $1\frac{1}{2}$ gallons are left. The beverage made by the same *Date wine and fig wine.* XV. CXXV.

bacis factum est myrtidanum vocatur, hoc manus tinguit.

105 Ex his quae in hortis gignuntur fit vinum e radice asparagi, cunila, origano, api semine, habrotono, mentastro, ruta, nepeta, serpyllo, marruvio; manipulos binos condunt in cadum musti et sapae sexta-
106 rium et aquae marinae heminam. e napis fit duum denariorum pondere in sextarios binos musti addito, item e scillae radice, inter flores ex rosae foliis tusis in linteolo in mustum collatis cum ponduscula ut sidat, X L pondere in sextarios musti vicenos—vetant[1] ante tres menses vas aperiri—,[2] item nardo Gallico et aliud e silvestri.

107 Aromatiten quoque invenio factitatum tantum non unguentorum compositione, primo ex murra, ut diximus, mox et nardo Celtico, calamo, aspalatho, offis in mustum aut dulce vinum deiectis, alibi calamo, iunco, costo, nardo Syriaco, amomo, casia,
108 cinnamo, croco, palma, asaro, similiter in offa; apud alios nardi etiam et malobathri selibris in musti congios duos additis, qualia nunc quoque fiunt pipere et melle addito quae alii condita, alii piperata appellant. invenitur et nectarites ex herba quam alii helenion, alii Medicam, alii symphyton, alii

[1] vetant *Mayhoff*: nec.
[2] *V.l.* vase aperto.

process from the berries of the wild myrtle is called myrtle wine; this stains the hands.

Vegetable wines.

Among the plants grown in gardens, wine is made from the root of asparagus, and from cunila, wild-marjoram, parsley-seed, southernwood, wild mint, rue, catmint, wild thyme and horehound; they put two handfuls of herb into a jar of must, together with a pint of boiled-down grape-juice and half a pint of sea-water. A wine is made from the navew turnip by adding two drams' weight of navew to a quart of must, and in the same way from the root of the squill; and, among flowers, from pounded rose-leaves wrapped in a linen napkin and thrown into must with a small weight attached to make it sink, in the proportion of 50 drams of rose-leaves to 2½ gallons of must—they say the jar must not be opened for three months—and also wine is made from Gallic nard and another from wild nard.

Herb wines.

I also find that aromatic wine is constantly made from almost exactly the same ingredients as perfumes—first from myrrh, as we have said, next also from Celtic nard, reed and aspalathus, cakes of which are thrown into must or sweet wine; and in other places, from reed, sweet rush, costus, Syrian nard, cardamom, bark and flowers of cinnamon, saffron, dates and hazelwort, similarly made up in the form of a cake; and among other people also from a mixture of half a pound of nard and cinnamon-leaf added to a gallon and a half of must; and this is also how at the present day what some people call savoury wines and others peppered wines are made by adding pepper and honey. We also find mention of nectar-wine, extracted from the plant which some call sun-flower, others herb of Media, or

Idaeam, alii Orestion, alii nectariam vocant, radice ponderis X L in sextarios sex musti addita similiter in
109 linteo. ex ceteris herbis fit absinthites in XL sextariis musti absinthi Pontici libra decocta ad tertias partes vel scopis absinthi in vinum additis. similiter hyssopites e Cilicio hyssopo unciis tribus in duos congios musti coiectis aut tusis in unum.[1] fiunt utraque et
110 alio modo, circa radices vitium sato. sic et helleboriten fieri ex veratro nigro Cato docet: sic fit et scammonites, mira vitium natura saporem alienum in se trahendi, quare et salicem redolent Patavinorum in palustribus vindemiae. sic et helleborum seritur in Thaso aut cucumis silvester aut scammonia, quod vinum phthorium vocatur, quoniam abortus facit.

111 Fit et ex herbis quarum naturae suo loco dicentur: e stoechade et radice gentianae et tragorigano et dictamno, asaro, dauco, elelisphaco, panace, acoro, thymo, mandragora, iunco. vocarunt et scyzinum et itaeomelin et lectisphagiten, quorum iam oblitterata ratio est.

112 E fruticum vero genere cedri utriusque, cupressus, laurus, iunipiri, terebinthi, calami,[2] lentisci, bacae

[1] *V.l.* vinum.

[2] *Hermolaus*: callen *aut* callini *aut* callia (in Gallia *Hardouin*).

symphyton or herb of Ida or Orestion or nectaria, the root of which is added in the proportion of 50 drams to 6 pints of must, after being similarly wrapped in a linen napkin. Of the remaining herbs, wormwood wine is made by boiling down a pound of Pontic wormwood in five gallons of must to one-third of its amount, or else by putting shoots of wormwood into wine. Similarly hyssop wine is made of Cilician hyssop by throwing three ounces of hyssop into a gallon and a half of wine, or, if the hyssop is first pounded, into three-quarters of a gallon. Each of these wines may also be made in another way, by sowing the plant round the roots of vines. Also Cato shows how to make hellebore wine in the same *R.R.* cxv. way by using black hellebore; also the same method is used in making scammony wine, vines having a remarkable property of drawing into themselves the flavour of some other plant, which explains why the grapes plucked in the marshes of Padua actually have a flavour of willow. Similarly in Thasos also hellebore is planted among the vines, or else wild cucumber or scammony; the wine so obtained is called by a Greek name denoting miscarriage, because it produces abortion.

Wine is also made from herbs the nature of which will be described in their proper place; for instance from lavender and from gentian root and goat-marjoram and dittany, hazelwort, carrot, sage, all-heal, acorus, thyme, mandragora, and sweet rush. There is also mention of scyzinum and itaeomelis and lectisphagites, for which the recipe is now lost.

Wines from shrubs.

From the shrub and tree class, use is made of both kinds of cedar, the cypress, the laurel, the juniper, the terebinth, the reed and the mastic-tree, the

aut lignum recens in musto decocuntur; item chamelaeae et chamaepityis, chamaedryis lignum, eodem modo et ex flore, in congium musti decem X pondere addito.

113 XX. Fit vinum et ex aqua ac melle tantum. quinquennio ad hoc servari caelestem iubent. aliqui prudentiores statim ad tertias partes decocunt et tertiam veteris mellis adiciunt, deinde XL diebus a[1] canis ortu in sole habent. alii diffusa ita decumo die obturant. hoc vocatur hydromeli et vetustate saporem vini adsequitur, nusquam laudatius quam in Phrygia.

114 XXI. quin et acetum melle temperabatur: adeo nihil intemptatum vitae fuit. oxymeli hoc vocarunt, mellis decem libris, aceti veteris heminis quinque, salis marini libra, aquae pluviae sextaris quinque suffervefactis deciens, mox elutriatis atque ita in-
115 veteratis. omnia ab Themisone summo auctore damnata; et, Hercules, coactus usus eorum videri potest, nisi si quis naturae opus esse credit aromatiten et ex unguentis vina conposita, aut ut biberentur genuisse eam frutices! ista[2] sunt cognitu iucunda sollertia[3] humani animi[4] omnia exquirente.[5] nihil quidem ex his anno durare, praeterquam quae

[1] a *add. Sillig.*
[2] *V.l.* ita.
[3] *V.l.* sollertiae.
[4] *Ita edd.* (humanae nomine *Mayhoff*): humane homine.
[5] *Edd.*: exquirentis *aut* -ti.

berries or else the new wood being boiled down in must; and similarly is used the wood of the dwarf olive, the ground-pine, and the germander, and in the same way wine is also made from their blossom, by adding ten drams' weight of it to three quarters of a gallon of must.

XX. A wine is also made of only water and honey. For this it is recommended that rain-water should be stored for five years. Some who are more expert use rain-water as soon as it has fallen, boiling it down to a third of the quantity and adding one part of old honey to three parts of water, and then keeping the mixture in the sun for 40 days after the rising of the Dog-star. Others pour it off after nine days and then cork it up. This beverage is called in Greek 'water-honey'; with age it attains the flavour of wine. It is nowhere rated more highly than in Phrygia. XXI. Also honey used even to be mixed with vinegar, so exhaustive have been men's experiments in living. This mixture was called in Greek 'sour honey'; it was made with ten pounds of honey, $2\frac{1}{2}$ pints of old vinegar, one pound of sea salt and 5 pints of rain-water, heated to boiling ten times, after which the liquor was drawn off and so kept till it was old. All these wines are condemned by Themison, who is a very high authority; and, I vow, the employment of them does appear to be a *tour de force*, unless anybody believes that aromatic wine and wines compounded of perfumes are products of nature, or that nature gave birth to shrubs in order for them to be used for drink! Contrivances of this sort are amusing to learn of, owing to the ingenuity of the human mind that investigates everything. There can be no doubt that none of these wines will keep

Honey wines.

vetustate ipsa fieri diximus, et plura ne tricenis quidem diebus, non erit dubium.

116 XXII. Sunt et in vino prodigia. dicitur in Arcadia fieri quod fecunditatem feminis inportet, viris rabiem; at in Achaia maxime circa Caryniam abigi partum vino, atque etiam si uvam edant gra-
117 vidae, cum differentia in gustatu non sit. Troezenium vinum qui bibant negantur generare. Thasios duo genera vini diversa facere proditur, quo somnus concilietur, alterum vero quo fugetur. apud eosdem vitis theriaca vocatur cuius et vinum et uva contra serpentium ictus medetur, libanodes [1] turis odore, ex qua diis prolibant. e diverso aspendios damnata aris [2]; ferunt eam nec ab alite ulla attingi. Thasiam uvam Aegyptus vocat apud se praedulcem quae solvit alvum; est contra Lyciae quae solutam firmat.
118 Aegyptus et ecbolada habet abortus facientem. vina in apothecis canis ortu mutantur quaedam posteaque restituuntur sibi; sic et mari navigato, cuius iactatus his quae duraverint tantum vetustatis adicere sentitur quantum habuerint.

[1] *Mayhoff*: libadeos.
[2] *Gelenius*: ab aris (avaris *Sellig*).

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[a] θηριακόν, 'good for curing an animal's bite'; our word 'treacle' comes from this Greek word.

[b] 'Not to be used for libations.'

a year, except those which we have stated to be actually the products of age, and that the larger number of them will not keep even a month.

XXII. Even wine contains miraculous properties One grown in Arcadia is said to produce ability to bear children in women and madness in men; whereas in Achaia, particularly in the neighbourhood of Carynia, there is a wine that is reported to prevent child-bearing, and this even if women eat the grapes when they are pregnant, although these do not differ in taste from ordinary grapes. It is said that persons who drink the wine of Troezen cannot become parents. The people of Thasos are reported to make two different kinds of wine, a wine that brings sleep and another that banishes sleep. The same place has a vine called in Greek the 'wild-animal vine,'[a] the wine made from which and also its grapes cure snake-bites, and another the 'frankincense vine,' with a scent like that of incense, the wine from which is used for libations to the gods. That of the vine called 'unconsecrated,'[b] on the contrary, is banned from the altars; also it is said that no bird will touch it. Egypt gives the name of 'wine of Thasos' to an extremely sweet native vintage which causes diarrhoea; while Lycia on the contrary has one that has an astringent effect on the bowels. Egypt also possesses a wine called in Greek 'delivery wine' which causes abortion. There are certain wines that, while stored in wine-lofts alter in quality at the rising of the Dog-star and afterwards change back again; the same is the case with wines shipped over sea, and it is observed that the effect of the motion on vintages that can stand it is merely to double their previous maturity.

Wines with curious properties.

119 XXIII. Et quoniam religione vita constat, prolibare dis nefastum habetur vina, praeter inputatae, vitis fulmine tactae quamque iuxta hominis mors laqueo pependerit, aut vulneratis pedibus calcata et quod circumcisis vinaceis profluxerit, aut superne deciduo inmundiore lapsu aliquo polluta; item Graeca, quoniam aquam habeant.

Vitis ipsa quoque manditur decoctis caulibus summis, qui et condiuntur in aceto ac muria.

120 XXIV. Verum et de apparatu vini dixisse conveniat, cum Graeci privatim ea praecepta condiderint artemque fecerint, sicut Euphronius et Aristomachus et Commiades et Hicesius. Africa gypso mitigat asperitatem, nec non aliquibus partibus sui calce. Graecia argilla aut marmore aut sale aut mari lenitatem excitat, Italiae pars aliqua crapulana [1] pice, ac resina condire musta volgare ei est provinciisque finitimis; nonnusquam prioris vini faece acetove condiunt.
121 nec non et ex ipso musto fiunt medicamina; decoquitur ut dulcescat pro [2] portione virium, nec durare ultra annum spatium tale proditur. aliquibus in locis decocunt ad sapas musta infusisque his

[1] *V.ll.* rapulana, rabulana.
[2] pro *add.* ? (*vel* ad portionem) *Mayhoff.*

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[a] An inferior kind of wine was got by trimming off the grape-skins protruding from the press after the first pressing and putting them through the press a second time. Varro *R.R.* I. 54.
[b] *Cf.* § 124 and *n.*

XXIII. And since life is upheld by religion it is considered sinful to pour libations to the gods, not only with wines made from a vine that has not been pruned, but from one that has been struck by lightning, or one in the neighbourhood of which a man has been hanged, or wine made from grapes that have been trodden out by someone with sore feet, or squeezed from grape-skins that have been cut round [a] or have been soiled by something not quite clean dropping on them from above; and likewise Greek wines must not be used for libations, because they contain water.

Vines not used for religious ritual.

The vine itself is also eaten, the tops of the shoots being boiled; they are also pickled in vinegar and brine.

XXIV. But it may also be proper to give an account of the method of preparing wine, as Greek authors have written special treatises on this subject and have made a scientific system for it—for instance Euphronius, Aristomachus, Commiades and Hicesius. The practice in Africa is to soften any roughness with gypsum, and also in some parts of the country with lime. In Greece, on the other hand, they enliven the smoothness of their wines with potter's earth or marble dust or salt or sea-water, while in some parts of Italy they use resinous [b] pitch for this purpose, and it is the general practice both there and in the neighbouring provinces to season must with resin; in some places they use the lees of older wine or else vinegar for seasoning. Moreover, medicaments for this purpose are also made from the must itself: it is boiled down so as to become sweeter in proportion to its strength, and it is said that must so treated does not last beyond a year's time. In some places they boil the must down into what is called sapa,

Methods of making wine.

ferociam frangunt. et in hoc tamen genere et in omni alio subministrant vasa ipsa condimentis picis, cuius faciendae ratio proximo dicetur volumine.

122 XXV. Arborum suco manantium picem resinamque aliae ortae in oriente aliae in Europa ferunt; quae interest Asia utrimque quasdam habet. in oriente optimam tenuissimamque terebinthi fundunt, dein lentisci, quam et masticen vocant, postea cupressi, acerrimam sapore, liquidam omnes et tantum resinam, crassiorem vero et ad pices faciendas cedrus. Arabica resina alba est, acri odore, difficilis coquenti, Iudaea callosior et terebinthina quoque odoratior,
123 Syriaca Attici mellis similitudinem habet. Cypria antecedit omnes, item[1] melleo colore, carnosa. Colophonia praeter ceteras fulva, si teratur alba fit, gravior odore: ob id non utuntur ea unguentarii. in Asia quae fit e picea, admodum candida, psagdas vocatur. resina omnis dissolvitur oleo, quidam et creta figulinarum hoc fieri arbitrantur; pudetque confiteri maximum iam honorem eius esse in evellendis virorum corpori pilis.

124 Ratio autem condiendi musta in primo fervore, qui novem diebus cum plurimum peragitur, adspersu

[1] *Mayhoff*: autem (est autem *edd.*).

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[a] Part of Asia Minor.

and pour this into their wines to overcome their harshness. Still both in the case of this kind of wine and in all others they supply the vessels themselves with coatings of pitch, the method of making which will be described in the next volume. XVI. 52.

Varieties of resin.

XXV. Of the trees which distil a juice, some growing in the East and others in Europe produce pitch and resin, and the province of Asia,[a] which lies between the two, has some of both sorts. In the East the best and finest resin is produced by the turpentine-tree, and next by the lentisk—the latter being also called gum-mastic; afterwards comes the juice of the cypress, which has a very sharp flavour—all of these trees producing a liquid juice and merely a resin, whereas the juice of the cedar is thicker and suitable for making pitch. Arabian resin is white and has a sharp scent, stifling to a person engaged in boiling it; the resin of Judaea dries harder and has a stronger scent than even that from the turpentine-tree; and Syrian resin has a resemblance to Attic honey. The resin of Cyprus excels all other kinds; it likewise is the colour of honey, and has a fleshy consistency. That of Colophon is yellower than the rest, but if ground up turns white; it has a rather oppressive scent, and consequently the perfumers do not make use of it. In Asia a very white resin is made from the pitch-pine; it is called psagdas. All resin can be dissolved in oil, and some people think that potter's chalk can also be so dissolved; and I am ashamed to confess that the chief value now set on resin is for use as a depilatory for men.

Use of resin and other substances for flavouring wine.

The method of seasoning wine is to sprinkle the must with pitch during its first fermentation, which is completed in nine days at most, so that the

picis, ut odor vino contingat et saporis quaedam acumina. vehementius id fieri arbitrantur crudo flore resinae excitarique lenitatem, e diverso crapula conpesci feritatem nimiam frangique virus aut, ubi pigra lenitas torpeat, virus addi, Liguriae maxime
125 Circumpadanisque mustis. crapulae utilitas discernitur hoc modo: pugnacibus mustis crapulae plus inditur, lenibus parcius. sunt qui et[1] utroque condiri velint; nec non aliqua est musti picea[2] natura, vitiumque musto quibusdam in locis iterum sponte fervere, qua calamitate deperit sapor: vappae accipit nomen, probrosum etiam hominum cum degeneravit animus. aceti enim nequitiae inest virtus magnos ad usus, et sine quis mitior vita degi non
126 possit. cetero vinorum medicaminis tanta cura est ut cinere apud quosdam ceu gypso alibi et quibus diximus modis instaurentur; sed cinerem e vitis sarmentis aut quercu praeferunt. quin et marinam aquam eiusdem rei gratia ex alto peti iubent servarique ab aequinoctio verno, aut certe nocte solstitio

[1] et *Mayhoff*: ex.
[2] *Urlichs*: alia que est mulsi pice et.

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[a] *Crapula*, properly intoxication or sick-headache, but transferred to the liquor that was supposed to produce this state.

wine may be given the scent of pitch and some touches of its piquant flavour. It is thought that a more effective way of doing this is by means of raw flower of resin, this giving briskness to the smooth quality of the wine, while on the other hand resin-juice [a] is believed to mitigate the excessive harshness of a wine and to conquer its asperity, or in the case of a thin, smooth, flat wine to add a touch of asperity —this is especially done with the musts of Liguria and the localities on the border of the river Po. The beneficial employment of resin-juice is adjusted in this way: a larger quantity of juice is put into strong, fiery wines, and it is used more sparingly with thin, flat ones. Some people advise using both resin-juice and pitch to season must; and in fact must has a certain pitchy quality and in some districts the fault of must is that it ferments a second time of its own accord, a disaster that destroys its flavour; this liquor is given the name of vappa, which is also applied as a term of opprobrium to human beings when their spirit has deteriorated. For the tartness of vinegar possesses a valuable quality useful for important purposes, and without which it is impossible to live in comparative comfort. For the rest, so much attention is given to the treatment of wines that in some places ashes are employed, as is gypsum elsewhere, and the methods that we have specified, for the pur- § 120.
pose of improving their condition; but preference is given to ashes obtained from vine-clippings or from oakwood. Also it is recommended that sea-water should be used for this purpose that has been obtained a long way out at sea at the spring equinox and then kept in store, or at all events that it should be taken up during the night at the time of the solstice and

et aquilone flante hauriri, vel, si circa vindemiam hauriatur, decoqui.

127 Pix in Italia ad vasa vino condendo maxime probatur Bruttia; fit e piceae resina. in Hispania autem e pinastris minime laudata; est enim resina harum amara et arida et gravi odore. differentiam rationemque faciendi proximo volumine demonstrabimus inter arbores feras. vitia praeter supra dicta acor aut fumidum virus, picis autem adustio; experimentum vero si fragmenta subluceant ac sub dente
128 lentescant acore iucundo. Asia picem Idaeam maxime probat, Graecia Piericam, Vergilius Naryciam. diligentiores admiscent nigram masticen, quae in Ponto bitumini similis gignitur, et iris radicem oleumque. nam ceram accipientibus vasis conpertum vina acescere; sed transferre in ea vasa in quibus acetum fuerit utilius quam in ea in quibus dulce aut mulsum.
129 Cato iubet vina concinnari—hoc enim utitur verbo—cineris lixivi cum defruto cocti parte quadragesima [1] in culleum, vel salis sesquilibra, interim et tuso marmore; facit et sulpuris mentionem, resinae vero
130 in novissimis. super omnia addi maturescente iam

[1] *Hermolaus e Catone*: quadringentesima.

[a] In the sense of employing wine in a laxative.

when a north wind is blowing, or if it is obtained about vintage time it should be boiled before being used.

The pitch most highly esteemed in Italy for vessels intended for storing wine is that which comes from the Bruttii; it is made from the resin of the pitch-pine. But the pitch obtained from the wild pine in Spain is very little valued, as resin from that tree is bitter and dry and has a disagreeable smell. The varieties of pitch and the method of making it we shall set out in the next volume when we are dealing with forest trees. The defects in resin beside those already mentioned are acridity or else a smoky tang, while the fault of pitch is being over-burnt; but the test is if when it is broken up the pieces have a luminous appearance, and if they stick to the teeth with an agreeably tart taste. In Asia pitch from Ida is most popular, and in Greece that of Pieria, but Virgil gives the preference to the pitch of Naryse. The more careful makers mix with the wine black mastich, which is found in Pontus and which resembles bitumen, and also iris-root and oil. As for waxing the vessels it is found that this makes the wine turn sour; but it pays better to transfer the wine into vessels that have contained vinegar than into those which have contained sweet wine or mead. Cato recommends that wine should be 'adjusted'—this is the word he uses [a]—by adding lye-ashes boiled with boiled-down must in the proportion of a fortieth part to the wine skin, or else a pound and a half of salt, also occasionally some pounded marble; he also mentions sulphur, but he only puts resin near the end of the list. When the wine is beginning to mature he advises adding on the top of all some of

Pitch for coating wine casks.

XVI. 53 f.

Georgics II. 498.

Substances used to mix with wine.

R.R. XXIII, CXIV, CXXII.

vino iubet mustum quod ille tortivum appellat, nos intellegimus novissime expressum. et addi scimus[1] tinguendi gratia colores ut pigmentum aliquod vini, atque ita pinguius fieri. tot veneficiis placere cogitur, et miramur noxium esse.

In vitium inclinantis experimentum est lamnae plumbeae mutatus in eo colos.

131 XXVI. Proprium autem inter liquores vino mucescere aut in acetum verti; extantque medicinae volumina. faex vini siccata recipit ignes ac sine alimento per sese flagrat; cinis eius nitri naturam habet easdemque vires, hoc amplius quod pinguior sentitur.

132 XXVII. Magna et collecto iam vino differentia in caelo. circa Alpes ligneis vasis condunt tegulisque[2] cingunt, atque etiam hieme gelida ignibus rigorem arcent. rarum dictu, sed aliquando visum, ruptis vasis stetere glaciatae moles, prodigii modo, quoniam vini natura non gelascit: alias ad frigus stupet tantum.
133 mitiores plagae doliis condunt infodiuntque terrae tota aut ad portionem situs:[3] ita[4] caelum prohibent: alibi vero impositis tectis arcent. traduntque et haec praecepta: latus cellae vinariae aut certe fenestras

[1] *Mayhoff*: addiscimus.
[2] tegulisque? *Mayhoff*: tectisque *aut* circulisque.
[3] *V.l.* sinus.
[4] *Mayhoff*: item.

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[a] A conjectural emendation: the MSS. give 'with roofs' or 'with hoops.'

[b] *I.e.* so as to cover up a portion of their height as they are placed. A variant reading seems to mean 'up to a portion of the curve of the jar.'

the must which he calls ' squeezings,' which we take to mean that which is the very last pressed out. Also we know that for the sake of colouring the wine colours are added as a sort of pigment and that this gives the wine more body. So many poisons are employed to force wine to suit our taste—and we are surprised that it is not wholesome!

It is a proof that wine is beginning to go bad if a sheet of lead when dipped in it turns a different colour.

Preservatives.

XXVI. It is a peculiarity of wine among liquids to go mouldy or else to turn into vinegar; and whole volumes of instructions how to remedy this have been published. Wine-lees when dried will catch fire, and go on burning of themselves without fuel being added; their ashes have the nature of nitre, and the same properties, with the addition that they are greasier to the touch.

Storage of wine.

XXVII. Even in regard to wine already vintaged there is a great difference in point of climate. In the neighbourhood of the Alps they put it in wooden casks and close these round with tiles [a] and in a cold winter also light fires to protect it from the effect of the cold. It is seldom recorded, but it has been seen occasionally, that the vessels have burst in a frost, leaving the wine standing in frozen blocks—almost a miracle, since it is not the nature of wine to freeze: usually it is only numbed by cold. Districts with a milder climate store their wine in jars and bury them in the ground entirely, or else up to a part of their position,[b] so protecting them against the atmosphere; but in other places people keep off the weather by building roofs over them. And they also give the following rules: one side of a wine-cellar or at least

obverti in aquilonem oportere vel utique in exortum aequinoctialem; sterculinia et arborum radices procul abesse, omniaque odoris evitandi facillimo in
134 vina transitu, ficos utique et caprificos; doliis etiam intervalla dari, ne inter sese vitia serpant contagione vini semper ocissima. quin et figuras referre: ventriosa ac patula minus utilia. picari oportere protinus a canis ortu, postea perfundi marina aqua aut salsa, dein cinere e sarmentis aspergi vel argilla, abstersa murra suffiri ipsasque saepius cellas. inbecilla vina demissis in terram doliis servanda, valida
135 expositis. numquam implenda, et quod supersit passo aut defruto perunguendum admixto croco pistave iri [1] cum sapa. sic opercula doliorum medicanda addita mastiche aut pice Bruttia. bruma aperiri vetant nisi sereno die, vetant austro flante lunave plena.

136 Flos vini candidus probatur; rubens triste signum est, si non is vini colos sit; item vasa incalescentia operculave sudantia. quod celeriter florere coeperit odoremque trahere non fore diutinum. ipsa quoque

[1] *Fels*: pisave iri *aut alia.*

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[a] A mould that forms on the surface and then sinks and is held in suspension.

its windows ought to face north-east, or at all events east; dunghills and tree-roots must be a long way off, and all objects with a strong smell should be avoided, as it very easily passes into wine—particularly there must be no fig-trees or wild figs near; also spaces must be left between the jars, to prevent taints passing from one to the other, as wine is always liable to very rapid infection. Moreover (these instructions proceed) the shape of the jars is important: pot-bellied and broad ones are not so good. Immediately after the rising of the Dog-star they should be coated with pitch, and afterwards washed with sea-water or water with salt in it, and then sprinkled with ashes of brushwood or else with potter's earth, and then rubbed clean and fumigated with myrrh, as should frequently be done with the wine-cellars also. Weak vintages should be kept in jars sunk in the ground, but jars containing strong wines should be exposed to the air. The jars must never be filled quite full, and the space above the surface of the wine must be smeared with raisin-wine or boiled-down must mixed with saffron or iris pounded up with boiled must. The lids of the jars should be treated in the same way, with the addition of mastich or Bruttian pitch. It is laid down that jars must not be opened at mid-winter except on a fine day, and not when a south wind is blowing, or at a full moon.

Flower [a] of wine forming is thought to be a good *Tests of keeping.* sign if it is white, but a bad sign if it is red, unless it is a red wine; similarly it is a bad sign if the jars feel warm to the touch, or if the lids sweat. Wine that quickly begins to form a flower and to develop an odour is not going to keep. Also boiled-down must

defruta ac sapa cum sit caelum sine luna, hoc est in sideris eius coitu, neque alio die coqui debent; praeterea plumbeis vasis, non aereis, nucibusque iuglandibus additis: eas enim fumum excipere. Campaniae nobilissima exposita sub diu in cadis verberari sole, luna, imbre, ventis aptissimum videtur.

137 XXVIII. Ac si quis diligentius reputet, in nulla parte operosior vita est—ceu non saluberrimum ad potus aquae liquorem natura dederit, quo cetera omnia animantia utuntur, at nos vinum bibere et iumenta cogimus—tantoque opere, tanto labore et inpendio constat[1] quod hominis mentem mutet ac furorem gignat, milibus scelerum ob id editis, tanta dulcedine ut magna pars non aliud vitae prae-
138 mium intellegat. quin immo, ut plus capiamus, sacco frangimus vires, et alia inritamenta excogitantur ac bibendi causa etiam venena concipiuntur, aliis cicutam praesumentibus ut bibere mors cogat, aliis pumicis farinam et quae referendo pudet docere.
139 cautissimos ex iis in balineis coqui videmus exanimesque efferri, iam vero alios lectum expectare non posse, immo vero nec tunicam, nudosque ibi protinus

[1] *V.l.* praestat.

[a] Cf. *Il.* VIII. 189, Andromache used to give wine to Hector's horses—though the genuineness of the whole passage is suspected; and Columella II. 3, wine given to flagging oxen.

and must of new wine should be boiled when there is no moon, which means at the conjunction of that planet, and not on any other day; and moreover leaden and not copper jars should be used, and some walnuts should be thrown into the liquor, for those are said to absorb the smoke. The best way of treating the finest wines of Campania seems to be to set them out in casks in the open air, exposed to the sun, moon, rain and wind.

Trouble spent on wine and wine-drinking. Excessive drinking.

XXVIII. And if anybody cares to consider the matter more carefully, there is no department of man's life on which more labour is spent—as if nature had not given us the most healthy of beverages to drink, water, which all other animals make use of, whereas we compel even our beasts of burden to drink wine! [a] and so much toil and labour and outlay is paid as the price of a thing that perverts men's minds and produces madness, having caused the commission of thousands of crimes, and being so attractive that a large part of mankind knows of nothing else worth living for! Nay, what is more, to enable us to take more, we reduce its strength by means of a linen strainer, and other enticements are devised and even poisonous mixtures are invented to promote drinking, some men taking a dose of hemlock before they begin, in order that fear of death may compel them to drink, while others take powdered pumice and preparations which I am ashamed to teach the use of by describing them. The most cautious of these topers we see getting themselves boiled in hot baths and being carried out of the bathroom unconscious, and others actually unable to wait to get to the dinner table, no, not even to put their clothes on, but straight away on the spot, while still naked and panting, they snatch up huge

et anhelos ingentia vasa corripere velut ad ostentationem virium ac plena infundere, ut statim vomant rursusque hauriant; idque iterum tertiumque, tamquam ad perdenda vina geniti, et tamquam effundi
140 illa non possint nisi per corpus humanum. huc pertinent peregrinae exercitationes et volutatio in caeno ac pectorosa cervicis repandae ostentatio. per omnia haec praedicatur sitis quaeri. iam vero quae in bibendo certamina, quae vasa adulteriis caelata, tamquam per se parum doceat libidines temulentia! ita vina ex libidine hauriuntur, atque etiam praemio invitatur ebrietas et, si dis placet, emitur. alius ut quantum biberit tantum edat [1] pretium vinolentiae lege accipit, alius quantum alea quaesierit
141 tantum bibit. tunc avidi matronam oculi licentur, graves produnt marito; tunc animi secreta proferuntur: alii testamenta sua nuncupant, alii mortifera elocuntur rediturasque per iugulum voces non continent, quam multis ita interemptis, volgoque veri-
142 tas iam attributa vino est. interea, ut optime cedat, solem orientem non vident, ac minus diu vivunt. hinc pallor et genae pendulae, oculorum ulcera,

[1] *V.l.* edit.

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[a] The proverb *In vino veritas.*

vessels as if to show off their strength, and pour down the whole of the contents, so as to bring them up again at once, and then drink another draught; and they do this a second and a third time, as if they were born for the purpose of wasting wine, and as if it were impossible for the liquor to be poured away unless by using the human body as a funnel. This is the object of the exercises that have been introduced from foreign countries, and of rolling in the mud and throwing the neck back to show off the muscles of the chest. It is declared that the object of all these exercises is merely to raise a thirst! Then again, think of the drinking matches! think of the vessels engraved with scenes of adultery, as though tippling were not enough by itself to give lessons in licentiousness! Thus wine-bibbing is caused by licence, and actually a prize is offered to promote drunkenness—heaven help us, it is actually purchased. One man gets a prize for tipsiness on condition of his eating as much as he has drunk; another drinks as many cups as are demanded of him by a throw of the dice. Then it is that greedy eyes bid a price for a married woman, and their heavy glances betray it to her husband; then it is that the secrets of the heart are published abroad: some men specify the provisions of their wills, others let out facts of fatal import, and do not keep to themselves words that will come back to them through a slit in their throat—how many men having lost their lives in that way! and truth has come to be proverbially credited to wine.[a] Meantime, even should all turn out for the best, drunkards never see the rising sun, and so shorten their lives. Tippling brings a pale face and hanging cheeks,

tremulae manus effundentes plena vasa, quae sit poena praesens furiales somni et inquies nocturna, praemiumque summum ebrietatis libido portentosa ac iucundum nefas. postero die ex ore halitus cadi ac rerum omnium oblivio morsque memoriae. rapere se ita vitam praedicant, cum priorem diem cotidie
143 perdant alii,[1] illi vero et venientem. Tiberio Claudio principe ante hos annos XL institutum ut ieiuni biberent potusque vini antecederet cibos, externis et hoc artibus ac medicorum placitis novitate semper
144 aliqua sese commendantium. gloriam hac virtute Parthi quaerunt, famam apud Graecos Alcibiades meruit, apud nos cognomen etiam Novellius Torquatus Mediolanensis, ad proconsulatum usque e praetura[2] honoribus gestis, tribus congiis (unde et cognomen illi fuit),[3] epotis uno impetu, spectante miraculi gratia Tiberio principe in senecta iam severo atque etiam saevo: alias et ipsi iuventa ad merum pronior
145 fuerat, eaque commendatione credidere L. Pisonem urbis curae ab eo delectum quod biduo duabusque noctibus perpotationem continuasset apud ipsum iam principem. nec alio magis Drusus Caesar re-
146 generasse patrem Tiberium ferebatur. Torquato

[1] alii *add. Rackham.*
[2] *V.l.* praeturae.
[3] [unde . . . fuit]? *Rackham.*

[a] Tricongius.
[b] This repetition of the explanation of the name looks like an interpolation.
[c] *Praefectus urbis.*

sore eyes, shaky hands that spill the contents of vessels when they are full, and the condign punishment of haunted sleep and restless nights, and the crowning reward of drunkenness, monstrous licentiousness and delight in iniquity. Next day the breath reeks of the wine-cask, and everything is forgotten—the memory is dead. This is what they call 'snatching life as it comes!' when, whereas other men daily lose their yesterdays, these people lose to-morrow also. Forty years ago, during the rule of the Emperor Tiberius, the fashion set in of drinking on an empty stomach and preceding meals with a draught of wine—yet another result of foreign methods and of the doctors' policy of perpetually advertising themselves by some novelty. This is the kind of prowess by which the Parthians seek fame and Alcibiades won his reputation in Greece, and to which among ourselves Novellius Torquatus of Milan even owed his surname [a]—a man who held the offices of state from praetor right up to deputy consul—by tossing off $2\frac{1}{4}$ gallons at one draught, which was actually the origin of his surname; [b] this was shown off as a sort of mystery before the Emperor Tiberius in his old age, when he had become very strict and indeed cruel, though for the matter of that his own earlier years had been somewhat inclined to strong drink, and it was believed that what recommended Lucius Piso to Tiberius for selection as custodian of the city [c] was that he had kept on carousing for two days and two nights without a break, at Tiberius's own house after he had become Emperor. And it was said that Drusus Caesar took after his father Tiberius in nothing more than in this. Torquatus had the unusual distinction—as

Stories of topers.

rara gloria—quando et haec ars suis legibus constat—non labasse sermone, non levatum vomitione nec alia corporis parte dum biberet, matutinas obisse sine[1] iniuria vigilias, plurimum hausisse uno potu, plurimum praeterea aliis minoribus addidisse, optima fide non respirasse in hauriendo neque expuisse, nihilque ad elidendum in pavimentis sonum ex vino reliquisse,
147 diligenti scito legum contra bibendi fallacias. Tergilla Ciceronem M. f. binos congios simul haurire solitum ipsi obicit, Marcoque Agrippae a temulento scyphum inpactum: etenim haec sunt ebrietatis opera. sed nimirum hanc gloriam auferre Cicero
148 voluit interfectori patris sui M. Antonio; is enim ante eum avidissime adprehenderat hanc palmam edito etiam volumine de sua ebrietate, quo patrocinari sibi ausus adprobavit plane, ut equidem arbitror, quanta mala per temulentiam terrarum orbi intulisset. exiguo tempore ante proelium Actiacum id volumen evomuit, quo facile intellegatur ebrius iam sanguine civium et tanto magis eum sitiens. namque et haec necessitas vitium comitatur ut bibendi consuetudo augeat aviditatem, scitumque est Scytharum legati, quanto plus biberint tanto magis sitire Parthos.

[1] sine *add. Detlefsen.*

even this science has its own code of rules—of never having stammered in his speech or relieved himself by vomiting or otherwise while he was drinking, but of having always turned up for duty with the morning guard without anything going wrong, and of having drunk the largest quantity on record at one draught and also added to the record by some more smaller draughts, of not having taken breath or spat while drinking (this on the best evidence), and of not having left any heel-taps to make a splash in the paved floor—under the elaborate code of rules to prevent cheating in drinking. Tergilla brings it up against Marcus Cicero that his son Cicero was in the habit of tossing off a gallon and a half at one draught, and that when tipsy he threw a goblet at Marcus Agrippa: these in fact are the usual results of intoxication. But no doubt young Cicero wanted to deprive his father's murderer, Mark Antony, of his fame in this department; for Antony had strained every effort to win the championship in this field before him, by actually publishing a book on the subject of his own drunken habits; and by venturing to champion his claims in this volume, to my mind he clearly proves the magnitude of the evils that he had inflicted on the world through his tippling. It was shortly before the battle of Actium that he vomited up this volume, so proving clearly that he was already drunk with the blood of his compatriots, and that that made him only the more thirsty for it. For in fact the inevitable result of this vice is that the habit of drinking increases the appetite for it, and it was a shrewd observation of the Scythian ambassador that the more the Parthians drank the thirstier they became.

149 XXIX. Est et occidentis populis sua ebrietas e[1] fruge madida, pluribus modis per Gallias Hispaniasque, nominibus aliis sed ratione eadem. Hispaniae iam et vetustatem ferre ea genera docuerunt. Aegyptus quoque e fruge sibi potus similis excogitavit, nullaque in parte mundi cessat ebrietas; meros quippe hauriunt tales sucos nec diluendo ut vina mitigant; at, Hercules, illic tellus fruges parare videbatur. heu, mira vitiorum sollertia! inventum est quemadmodum aquae quoque inebriarent.

150 Duo sunt liquores humanis corporibus gratissimi, intus vini, foris olei, arborum e genere ambo praecipui, sed olei necessarius, nec segniter in eo vita elaboravit. quanto tamen in potu ingeniosior fuerit apparebit ad bibendum generibus centum octoginta quinque (si species vero aestimentur, paene duplici numero) excogitatis, tantoque paucioribus olei, de quo sequenti volumine dicemus.

[1] e *v.l. om.*

XXIX. The nations of the west also have their own intoxicant, made from grain soaked in water; there are a number of ways of making it in the various provinces of Gaul and Spain and under different names, although the principle is the same. The Spanish provinces have by this time even taught us that these liquors will bear being kept a long time. Egypt also has devised for itself similar drinks made from grain, and in no part of the world is drunkenness ever out of action, in fact they actually quaff liquors of this kind neat and do not temper their strength by diluting them, as is done with wine; yet, by Hercules, it used to be thought that the product of the earth in that country was corn. Alas, what wonderful ingenuity vice possesses! a method has actually been discovered for making even water intoxicated! *Beer in foreign countries.*

There are two liquids that are specially agreeable to the human body, wine inside and oil outside, both of them the most excellent of all the products of the tree class, but oil an absolute necessity, nor has man's life been slothful in expending labour upon it. How much more ingenious, however, man has been in respect of drink will be made clear by the fact that he has devised 185 kinds of beverages (or if varieties be reckoned, almost double that number), and so much less numerous kinds of oil—about which we shall speak in the following volume. *Oil.*

BOOK XV

LIBER XV

I. Oleam Theophrastus e celeberrimis Graecorum
auctoribus urbis Romae anno circiter CCCCXL ne-
gavit nisi intra $\overline{\text{XXXX}}$ passuum ab mari nasci,
Fenestella vero omnino non fuisse in Italia Hispania-
que aut Africa Tarquinio Prisco regnante, ab annis
populi Romani CLXXIII, quae nunc pervenit trans
Alpes quoque et in Gallias Hispaniasque medias.
2 urbis quidem anno DV Appio Claudio Caeci nepote
L. Iunio cos. olei librae duodenae denis[1] assibus
veniere, et mox anno DCLXXX M. Seius L. f. aedilis
curulis olei denas libras singulis assibus praestitit po-
3 pulo Romano per totum annum. minus ea miretur
qui sciat post annos XXII Cn. Pompeio III. cos. oleum
provinciis Italiam misisse. Hesiodus quoque, in
primis culturam agrorum docendam arbitratus vitam,
negavit oleae satorem fructum ex ea percepisse
quemquam—tam tarda tunc res erat; at nunc etiam
in plantariis ferunt, translatarumque altero anno
decerpuntur bacae.
4 II. Fabianus negat provenire in frigidissimis oleam
neque in calidissimis. genera earum tria dixit

[1] *Mayhoff*: duodenae *aut* duae denis.

BOOK XV

I. One of the most celebrated Greek authors, Theophrastus, who flourished about 314 b.c., stated that the olive only grows at places within forty miles of the sea, while Fenestella says that in 581 b.c., during the reign of Tarquinius Priscus, it was not found at all in Italy and Spain or in Africa; whereas at the present day it has penetrated even across the Alps and into the middle of the Gallic and Spanish provinces. Indeed in 249 b.c., the year in which Appius Claudius the grandson of Appius Claudius Caecus and Lucius Junius were the consuls, olive-oil cost 10 *asses* for 12 lbs. and somewhat later, in 74 b.c., the curule aedile Marcus Seius, son of Lucius, throughout the whole of his year of office supplied the Roman public with oil at the rate of an as for 10 lbs. These facts will seem less surprising to a person who knows that 22 years later in the third consulship of Gnaeus Pompeius Italy exported oil to the provinces. Also Hesiod, who thought that instruction in agriculture was a prime necessity of life, declared that no one had ever gathered fruit from an olive-tree of his own planting—so slow a business it was in those days, whereas now olive-trees bear even in the nursery-gardens, and after they have been transplanted olives are picked from them the next year.

Natural history of fruit-trees. The olive: its diffusion.

II. Fabianus says that the olive will not grow in extremely cold places nor yet in extremely hot ones.

Olive-growing and picking.

Vergilius, orchites et radios et posias, nec desiderare rastros aut falces ullamve curam. sine dubio et in iis solum maxime caelumque refert; verumtamen et tondentur cum et vites, atque etiam interradi gau-
5 dent. consequens earum vindemia est, arsque vel maior olei musta temperandi: ex eadem quippe oliva differunt suci. primum omnium cruda dat [1] atque nondum inchoatae maturitatis—hoc sapore praestantissimum; quin et ex eo prima unda preli lautissima ac deinde per deminutiones, sive in sportis prematur sive, ut nuper inventum est, exilibus
6 regulis pede incluso. quanto maturior baca, tanto pinguior sucus minusque gratus. optima autem aetas ad decerpendum inter copiam bonitatemque incipiente baca nigrescere, cum vocant druppas, Graeci vere drypetidas. cetero distat tum,[2] maturitas illa in torcularibus fiat an ramis, rigua fuerit arbor an suo tantum baca suco nihilque aliud quam rores caeli biberit.

7 III. Vetustas oleo taedium adfert non item ut vino, plurimumque aetatis annuo est, provida, si libeat intellegere, natura, quippe temulentiae nascentibus vinis uti necesse non est, quin immo invitat ad servan-

[1] dat *add. Mueller.*
[2] *Mueller*: distat an *aut* distant an.

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[a] *Georgics* II. 85 and 420.
[b] From ὄρχις, a testicle.
[c] The modern long olive.
[d] Probably the *Olea media rotunda praecox.*

Virgil [a] said that there are three kinds of olive, the orchites,[b] the shuttle-olive [c] and the posia; [d] he also stated that the olive-tree does not require raking or pruning or any attention. There is no doubt that even in the case of olives the soil and the climate are of very great importance; but nevertheless they are also pruned at the same time as the vine, and they like the ground to be raked between them as well. Olive-picking follows the vintage, and making olive-oil requires even more science than making wine, as the same olive-tree produces a variety of oils. The first oil of all is obtained from the raw olive and when it has not yet begun to ripen—this has the best flavour; moreover its first issue from the press is the richest, and so on by diminishing stages, whether the olives are crushed in wicker sieves or by enclosing the spray in narrow-meshed strainers, a method recently invented. The riper the berry is, the greasier and less agreeable in flavour is the juice. The best age for picking olives, as between quantity and flavour, is when the berry is beginning to turn black, at the stage when they are called druppae with us and drypetides by the Greeks. For the rest, it makes a difference at that stage whether the maturing of the berry takes place in the presses or on the boughs, and whether the tree has been watered or the berry has only been moistened by its own juice and has drunk nothing else but the dews of heaven.

III. It is not the same with olive-oil as with wine —age gives it an unpleasant flavour, and at the end of a year it is already old. Herein, if one chooses to understand it, Nature shows her forethought, inasmuch as there is no necessity to use up wine, which is produced for the purpose of intoxication *Olive-oil: where best produced.*

dum blanda inveterati caries, oleo noluit parci
8 fecitque ea necessitate promiscuum et volgo. principatum in hoc quoque bono optinuit Italia e toto orbe, maxime agro Venafrano eiusque parte quae Licinianum fundit oleum, unde et Liciniae gloria praecipua olivae. unguenta hanc palmam dedere accommodato ipsis odore, dedit et palatum delicatiore sententia. de cetero bacas Liciniae nulla avis adpetit. relicum certamen inter Histriae terram et Baeticae par est; cetero fere vicina bonitas provinciis excepto Africae frugifero solo. Cereri id totum [1] natura concessit, oleum ac vinum tantum non invidit,[2] satisque gloriae in messibus fecit. reliqua erroris plena, quem in nulla parte vitae numerosiorem esse docebimus.

9 Oliva constat nucleo, oleo, carne, amurca. sanies haec est eius amara; fit ex aquis, ideo siccitatibus minima, riguis copiosa. suus quidem olivae sucus oleum est, idque praecipue ex inmaturis intellegitur, sicut in [3] omphacio docuimus. augetur oleum

[1] *Mueller*: totum *aut* totum id.
[2] *Sillig*: non invidit tantum.
[3] in *add. Mayhoff* (de *alii*).

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[a] As well as the grape, see XIV. 8.

—rather indeed the attractive over-ripeness which it acquires with age tempts us to keep it; but she did not desire us to be sparing in the use of oil, and she has made it universal even among common people because of the necessity of using it quickly. In the matter of this blessing also [a] Italy has won the highest rank of all the world, particularly in the district of Venafro and the part of it which produces the Licinian oil, which causes the Licinian olive to be exceptionally famous. It is unguents that have given it this eminence, because its scent is so well adapted to them, but it has also been awarded to it by the palate with its more delicate judgement. Moreover no bird will touch the berries of the Licinian olive. The remainder of the competition is maintained between the territory of Istria and that of Baetica on equal terms, while for the rest the provinces have an approximately equal rank, with the exception of Africa, whose soil is adapted for grain. This territory Nature has yielded entirely to the Corn-goddess, having all but entirely grudged it oil and wine, and having given it a sufficiency of glory in its harvests. The remaining statements prevalent concerning the olive are full of error, which we shall prove to be more prevalent in no other department of life. §§ 10, 14 f.

Properties of olive-oil; methods of obtaining it.

An olive consists of a stone, oil, flesh and lees; the latter constituent is a bitter fluid, which forms out of water and consequently there is very little of it in dry situations but a large amount in wet ones. The oil is indeed a juice peculiar to the olive, and this can be specially learnt from olives in an unripe state, as we have shown when treating of unripe olive-juice and grape-juice. The oil continues to XII. 130.

ad arcturi exortum[1] in a. d. XVI kal. Oct., postea
nuclei increscunt et caro. tum si etiam copiosi
imbres[2] accessere, vitiatur oleum in amurcam.
huius color olivam cogit nigrescere, ideoque inci-
piente nigritia minimum amurcae, ante eam nihil.
10 et error hominum falsus existimantium maturitatis
initium quod est vitii proximum, deinde quod oleum
crescere olivae carne arbitrantur, cum sucus omnis in
corpus abeat lignumque intus grandescat. ergo tum
maxime rigantur; quod ubi cura multisve imbribus
accidit, oleum absumitur nisi consecuta serenitate
quae corpus extenuet. omnino enim, ut Theo-
phrasto placet, et olei causa calor est, quare in torcu-
11 laribus etiam ac cellis multo igni quaeritur. tertia
est culpa in parsimonia, quoniam propter inpendium
decerpendi expectatur ut decidant olivae. qui
medium temperamentum in hoc servant perticis de-
cutiunt cum iniuria arborum sequentisque anni
damno; quippe olivantibus lex antiquissima fuit:
12 oleam ne stringito neve verberato. qui cautissime
agunt harundine levi ictu nec adversos percutiunt
ramos; sic quoque alternare fructus cogitur decussis
germinibus, nec minus si expectetur ut cadant[3];

[1] *V.l.* ab . . . exortu.
[2] *Mayhoff*: cum si etiam copiosiores.
[3] *Mayhoff*: cadat.

increase until the rising of the Bear-ward, that is till September 16; afterwards the increase is in the size of the stones and the flesh. At this stage if rain follows in actually large quantities, the oil is spoiled and turns into lees. The colour of these lees makes the olive-oil turn black, and consequently when there is only a tinge of black beginning it contains very little lees, and before any blackness shows none at all. People are quite mistaken in supposing what is really the near approach of decay to be the beginning of ripening, and it is also a mistake to imagine that the amount of oil is increased by the growth of the flesh of the olive, since all the juice is then going into a solid form and the woody interior is getting bigger. It is on this account that olive-trees are watered most plentifully at this period, but watering, whether done intentionally or occurring from repeated falls of rain, uses up the oil, unless fine weather follows to diminish the solid part of the berry. For, as Theophrastus holds, the cause of oil as of other things is entirely warmth, and this is why steps are taken to produce warmth even in the presses and the cellars by lighting large fires. A third mistake is in over-economy, as owing to the cost of picking people wait for the olives to fall. Those who compromise on a middle course in this matter knock the fruit down with poles, so injuring the trees and causing loss in the following year; in fact there was a very old regulation for the olive harvest: 'Neither strip nor beat an olive-tree.' Those who proceed most carefully use a reed and strike the branches with a light sideway blow; but even this method causes the tree to produce fruit only every other year, as the buds get knocked off, and this is no less the case if people

haerendo enim ultra suum tempus absumunt venientibus alimentum et detinent locum: argumentum est quod nisi ante favonium collectae novas vires resumunt et difficilius cadunt.

13 IV. Prima[1] ergo ab autumno colligitur vitio operae,[2] non naturae, posia cui plurimum carnis, mox orchites cui olei, post radius. has enim ocissime occupatas,[3] quia sunt tenerrimae, amurca cogit decidere. differuntur vero etiam in Martium mensem callosae, contra umorem pugnaces ob idque minimae, Licinia, Cominia, Contia, Sergia, quam Sabini regiam vocant, non ante favonii adflatum nigrescentis, hoc est a. d.
14 VI id. Feb. tunc arbitrantur eas maturescere, et quoniam probatissimum ex his fiat oleum, accedere etiam ratio pravitati videtur; feruntque frigore austeritatem fieri sicut copiam maturitate, cum sit illa bonitas non temporis, sed generis tarde putrescentium in amurcam. similis error collectam servandi in tabulatis nec prius quam sudet premendi, cum omni mora oleum decrescat, amurca augeatur. itaque volgo non amplius senas libras singulis modiis exprimi dicunt: amurcae mensuram nemo agit,

[1] primae *Mayhoff*.
[2] *Gelen*: opere.
[3] *V.l.* occupat estas (aestas *edd.*).

wait for the olives to fall off, for by remaining attached to the branches beyond their proper time they use up the nourishment for the coming crop and occupy its place: this is proved by the fact that if they are not gathered before the west wind blows they acquire renewed strength and fall off with greater difficulty.

Varieties of olives. Ways of storing and flavouring.

IV. Well then, the first olive gathered after the beginning of autumn is the posia, which owing to a faulty method of cultivation and not to any fault of nature, is a very fleshy fruit; next the orchites, which contains a great deal of oil, and after that the radius. For as these olives are very delicate the lees in them very quickly gets hold of them and cause them to fall off. But the gathering of the hard-skinned olives, which strongly resist damp and consequently are very small, is put off even till the month of March, the Licinian, Cominian, Contian and Sergian kinds, the last called by the Sabines the 'royal olive,' not turning black before the west wind blows, that is before February 8. It is thought that they begin to ripen then, and as a very excellent oil is made from them reason also appears to reinforce this mistake; and people say that the cold causes harshness in the oil in the same degree as the ripening of the berry increases the quantity, whereas in reality the goodness of the oil is not a matter of the time of gathering but of the kind of olive, which is slow in decaying into lees. A similar mistake is made in keeping the olives when gathered on wooden shelves and not crushing them till they sweat out juice, inasmuch as all delay diminishes the yield of oil and increases the quantity of lees. The consequence is the common assertion that a peck of olives yields only six pounds of oil; but nobody measures the

quanto ea copiosior reperiatur in eodem genere diebus
15 adiectis. omnino invictus error et publicus tumore olivae crescere oleum existimandi, cum praesertim nec magnitudine copiam olei constare indicio sint quae regiae vocantur, ab aliis maiorinae, ab aliis babbiae, grandissimae alioqui, minimo suco, et in Aegypto carnosissimis olei exiguum, Decapoli vero Syriae perquam parvae nec cappari maiores carne
16 tamen commendentur.[1] quam ob causam Italicis transmarinae praeferuntur in cibis, cum oleo vincantur, et in ipsa Italia ceteris Picenae et Sidicinae. sale illae privatim condiuntur et ut reliquae amurca sapave, nec non aliquae oleo suo et sine arcessita commendatione purae innatant, colymbades; franguntur eaedem herbarumque viridium sapore condiuntur. fiunt et praecoces ferventi aqua perfusae quamlibeat immaturae; mirumque dulcem sucum
17 olivas bibere et alieno sapore infici. purpureae sunt et in his, ut uvis, in nigrum colorem transeuntibus posiis. sunt et superbae praeter iam dicta genera; sunt et praedulces, per se tantum siccatae uvisque

[1] *Rackham*: commendantur.

quantity of lees, to discover how much larger an amount is found in the same kind of olive with every day that is added. There is an entirely unconquerable and widely prevalent mistake which supposes that the swelling of the olive increases the amount of the oil, in spite of the fact that the absence of connexion between the size of the berry and its yield of oil is proved by the olives called 'royal olives, and by some people 'large-size olives,' and by others 'babbiae'—but anyhow a very large olive with very little juice, and also that the very fleshy olives in Egypt produce a scanty amount of oil, while the extremely small olives at Decapolis in Syria, not larger than a caper, nevertheless have an attractive flesh. It is on this account that imported olives are preferred for the table to those grown in Italy, in spite of their being inferior for making oil, and in Italy itself the olives of Picenum and the Sidicini are preferred to all the other kinds. Those olives are kept separate and steeped in salt, as well as in lees or boiled must like the rest, and also some of them are left floating in their own oil and clean, without any adventitious attraction—the kind called in Greek 'swimmers'; these olives are also crushed and then seasoned with a flavouring of green herbs. Olives however unripe are actually made to ripen early by pouring boiling water on them; and it is surprising how olives suck up a sweet juice and take on a flavour that does not belong to them. As with grapes, so also among olives there are purple varieties, the posia almost shading off into black. Beside the kinds already mentioned there is also the 'proud olive,' as well as the very sweet variety, which is merely dried by itself and is sweeter than a raisin; this

passis dulciores, admodum rarae in Africa et circa Emeritam Lusitaniae.

18 Oleum ipsum sale vindicatur a pinguitudinis vitio. cortice oleae conciso odorem accipit: medicatio alia ut vino, palati gratia nulla est. nec tam numerosa differentia; tribus ut plurimum bonitatibus distat. odor in tenui argutior, et is tamen etiam in optimo brevis.

19 V. Oleo natura tepefacere corpus et contra algores munire, eidem fervores capitis refrigerare. usum eius ad luxuriam vertere Graeci vitiorum omnium genitores in gymnasiis publicando; notum est magistratus honoris eius octogenis sestertiis strigmenta olei vendidisse. oleae honorem Romana maiestas magnum perhibuit turmas equitum idibus Iuliis ea[1] coronando, item minoribus triumphis ovantes. Athenae quoque victores olea coronant, Graecia oleastro Olympiae.

20 VI. Nunc dicentur Catonis placita de olivis. in calido et pingui solo radium maiorem, Sallentinam, orchitem, posiam, Sergianam, Cominianam, albiceram seri iubet, adicitque singulari prudentia quam earum

[1] *Mayhoff*: ex ea.

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[a] *Magistratus honoris eius* is a rendering of γυμνασιάρχαι.

[b] *I.e.* the oil scraped off the athletes' bodies with a *strigil*.

[c] On this day the *equites* were reviewed by the censors, and ater by the emperors.

[d] In an *ovatio* the victorious general entered the city on foot, and not in a chariot, as at a proper *triumphus*.

last kind of olive is rather rare, and is grown in Africa and in the vicinity of Merida in Lusitania.

The actual oil can be guarded against the defect of thickening by the addition of salt. An aromatic scent can be given to the oil by making an incision in the bark of the tree; but any other mode of seasoning, like those used for wine, is no gratification to the palate. Nor are there so many varieties of olive-oil as there are of wine, there being at most three different grades of excellence. In fine oil the odour is more penetrating, though this is short-lived even in the best kind.

Uses of olives.

V. Olive-oil has the property of imparting warmth to the body and protecting it against cold, and also that of cooling the head when heated. Those parents of all the vices, the Greeks, have diverted the use of olive-oil to serve the purpose of luxury by making it a regular practice in their gymnasiums; the governors of those institutions [a] have been known to sell the scrapings of the oil [b] for 80,000 sesterces. The majesty of Rome has bestowed great honour on the olive-tree by decorating our cavalry squadrons with wreaths of olive on July 15,[c] and also when they are celebrating a minor triumph.[d] Athens also crowns victorious athletes with olive wreaths, and Greece the victors at Olympia with wreaths of wild olive.

Rules of Cato (R.R. VI. 1 f.) for growing, storing and pressing olives.

VI. We will now state the rules given by Cato in respect of olives. In a warm and rich soil he recommends planting the larger radius olive, the Sallentine, the orchites, the posia, the Sergian, the Cominian and the wax-white, and he adds with remarkable wisdom that the one among these pronounced in the particular localities to be the best should be used;

in iis locis optimam esse dicant,[1] in frigido autem et macro Liciniam; pingui enim aut ferventi vitiari eius oleum arboremque ipsa fertilitate consumi, musco
21 praeterea et rubore infestari. spectare oliveta in favonium loco exposito solibus censet, nec alio ullo modo laudat. condi olivas optime orchites et posias vel virides in muria vel fractas in lentisco. oleum quam acerbissima oliva optimum fieri. cetero quamprimum e terra colligendam, si inquinata sit, lavandam, siccari triduo satis esse; si gelent frigora, quarto die premendam; hanc et sale aspergi. oleum in tabulato minui deteriusque fieri, item in amurca et
22 fracibus—hae sunt carnes et inde faeces; quare saepius die capulandum, praeterea concha[2] et in plumbeas cortinas: aere vitiari. ferventibus omnia ea fieri clausisque torcularibus et quam minime ventilatis, ideo nec ligna ibi caedi oportere (qua de causa e nucleis ipsarum ignis aptissimus); ex cortinis in labra fundendum, ut fraces et amurca linquantur: ob id crebrius vasa mutanda, fiscinas spongia tergen-

[1] *Edd.* (dicent *Mayhoff*): dicens *aut* dicunt.
[2] *Mueller*: concham.

while he recommends planting the Licinian olive in a cold and thin soil, for the reason that rich or warm earth ruins its oil and the tree gets exhausted by its mere fertility, and moreover is attacked by moss and red rust. He advises that olive-yards should be in a position exposed to the sun and facing west, and he does not approve of any other arrangement. He says that the best way of preserving orchites and posia olives is either to put them in brine when they are green or to crush them and store them in mastic oil; the best olive-oil is made from the bitterest olive obtainable; for the rest the olives should be collected off the ground as soon as possible, and washed if they are dirty; it is enough to leave them to dry for three days, and if the weather is cold and frosty they must be pressed on the fourth day, and when pressed they should be sprinkled with salt. Olives kept on a boarded floor lose oil and it deteriorates in quality, and the same happens if the oil is left on the lees and the grounds—these are the flesh of the olive and produce the dregs; consequently it should be ladled several times a day, and moreover this must be done with a shell and into leaden caldrons, as copper spoils it. All these operations, he says, must be carried on with presses that have been heated and tightly closed, admitting as little air as possible, and therefore also no wood should be cut there (and consequently the most suitable fire is made with the stones of the olives themselves); the oil must be poured out of the caldrons into vats, so as to leave behind the grounds and the lees: for this purpose the vessels must be changed fairly frequently and the osier baskets wiped with a sponge, so that so far as

das, ut quam maxime pura sinceritas constet.
23 postea inventum ut lavarentur utique ferventi aqua, protinus prelo subicerentur solidae—ita enim amurca exprimitur—mox trapetis fractae premerentur iterum. premi plus quam centenos modios non probant[1]: factus vocatur, quod vero post molam primum expressum est, flos. factus tres gemino foro a quaternis hominibus nocte et die premi iustum est.
24 VII. Non erat tum ficticium oleum, ideoque arbitror de eo nihil a Catone dictum. nunc eius genera plura; primumque persequemur ea quae ex arboribus fiunt, et inter illas ante omnis ex oleastro. tenue id multoque amarius quam oleae et tantum ad medicamenta utile. simillimum huic est ex chamelaea, frutice saxoso, non altiore palmo, foliis
25 oleastri bacisque. proximum fit e[2] cici, arbore in Aegypto copiosa—alii crotonem, alii sibi,[3] alii sesamon silvestre eam appellant—ibique, non pridem et in Hispania, sponte[4] provenit altitudine oleae, caule ferulaceo, folio vitium, semine uvarum gracilium pallidarumque; nostri eam ricinum vocant a similitudine seminis. coquitur id in aqua innatansque oleum tollitur. at in Aegypto, ubi abundat,

[1] probat? *Rackham.*
[2] *Mayhoff*: et.
[3] *V.l.* sybi, sive (sili, *i.e.* σίσελε, *cf.* VIII 112, *Sillig*).
[4] *Dalec.*: repente.

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[a] *Forum,* the part of the press in which the olives or grapes were laid. Varro *R.R.* I. 54, 2.
[b] Κίκι, the castor-oil plant.

possible complete cleanliness may be produced. It was a later discovery, he says, to wash the olives in absolutely boiling water, and at once put them whole into the press—for that method crushes out the lees—and then to crush them in oil-mills and put them under the press a second time. People do not approve of pressing more than a hundred pecks of olives at a time: this is called a 'batch,' and what is squeezed out first after the millstone is called the 'flower.' It is a fair amount for three batches to be pressed in twenty-four hours by gangs of four men using a double holder.[a]

Artificial oils obtained from wood, leaves and berries of trees.

VII. At that time there was no artificial oil, and that I take to be the reason why Cato says nothing about it. At the present time there are several varieties of it; and we will treat first of those kinds which are produced from trees, and among them before all from the wild olive. It is a thin oil, and has a much more bitter flavour than the oil obtained from the cultivated olive, and it is only useful for medicines. Very closely resembling this oil is the oil obtained from the ground-olive, a rock shrub not more than three inches high, with leaves and fruit like those of the wild olive. The next class of oil is that obtained from the cici,[b] a tree growing in great abundance in Egypt—others call it the croton, others sibi, others wild sesame—and there, as well as not long ago in Spain also, it grows wild, shooting up as high as an olive-tree, with a stalk like that of the fennel, the leaf of a vine, and a seed-pod like a slender grape of a pale colour: our countrymen call it the tick, from the resemblance of the seed-pod to that insect. It is boiled in water and the oil floating on the surface is skimmed off. But in Egypt, where

sine igni et aqua sale asperso[1] exprimitur, cibis
26 foedum, lucernis exile. amygdalinum, quod aliqui neopum vocant, ex amaris nucibus arefactis et in offam contusis aspersam[2] aqua iterumque tusis exprimitur. fit et e[3] lauru admixto drupparum oleo: quidam[4] bacis exprimunt tantum, alii foliis modo, aliqui folio et cortici[5] bacarum, nec non styracem addunt aliosque odores. optima laurus ad id lati-
27 folia silvestris nigris bacis. simile est et e myrto nigra, et haec latifolia melior. tunduntur bacae aspersae calida aqua, mox decoquntur. alii foliorum mollissima decoqunt in oleo et exprimunt, alii deiecta ea in oleum prius sole maturant. eadem ratio et in sativa myrto, sed praefertur silvestris minore semine, quam quidam oxymyrsinen, alii chamaemyrsinen vocant, aliqui acoron a similitudine; est enim brevis, fruticosa.

28 Fit et e citro, cupresso, nucibus iuglandibus quod caryinum vocant, malis, cedro quod pisselaeon, e grano quoque Cnidio purgato semine et tunso, item lentisco. nam et cyprinum et e glande Aegyptia ut fierent[6] odorum causa dictum est. Indi e castaneis

[1] asperso (*sc.* semini)? *Mayhoff*: aspersum.
[2] *Mayhoff*: aspersum.
[3] e *add. Rackham.*
[4] quidam? *Mayhoff*: quidamque e.
[5] *V.l.* cortice.
[6] *Rackham*: fieret.

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[a] Perhaps the sweet-flag or calamus.
[b] From κάρυον, a walnut.
[c] 'Pitch-oil,' from πίσσα and ἔλαιον.
[d] The seed of the mezereon.

it abounds, fire and water are not employed, but salt is sprinkled on the pod and the oil is pressed out; for food it is disgusting, and it is of thin quality for burning in lamps. Amygdalinum, which some people call neopum, is pressed out of bitter almonds, dried and pounded into a cake that is sprinkled with water and then pounded again. An oil is also made from the bay-tree with an admixture of the oil of half-ripe olives; some people merely press the oil out of the berries, others use only the leaves, and some the leaf and the outer skin of the berries, and also add styrax gum and other scents. The best kind of bay-tree for this is the broad-leaved wild laurel with black berries. A similar oil also comes from the black myrtle, and the broad-leaved variety of this is the best. The berries are sprinkled with hot water and pounded, and then boiled down. Other people boil down the softest of the leaves in oil and press out the liquid, and others steep them in oil and allow them to mature in the sun before putting them in the press. The same method is also used in the case of the cultivated myrtle, but the wild variety with a smaller pod is preferred, the kind which certain people call oxymyrsine, others ground-myrsine, and some acorum [a] because of its resemblance to that plant, as it grows low and bushy.

Other trees and plants used for making oil.

Oil is also made from the citrus and the cypress, from walnuts—this is called caryinum,[b] from apples and from the cedar called pisselaeon;[c] also from grain of Cnidus [d] by cleaning and pounding the seed, and likewise from mastich. As for the method of making cypros-oil and also oil from an Egyptian berry for the purpose of scents, we have spoken of it already. XII. 100. 109.
The Indians are said to make oils from chestnuts and

ac sesima atque oryza facere dicuntur, Ichthyophagi
29 e piscibus. inopia cogit aliquando luminum causa
et e platani bacis fieri aqua et sale maceratis. et
oenanthinum fit—de ipsa oenanthe dictum est in
unguentis. gleucino mustum incoquitur vapore lento,
ab aliis sine igni circumdatis vinaceis diebus XXI bis
singulis permixtum, consumiturque mustum oleo.
aliqui non sampsuchum tantum admiscent sed etiam
pretiosiora odoramenta, ut [1] in gymnasiis quoque
30 conditur odoribus, sed vilissimis. fit et ex aspalatho,
calamo, balsamo, iri, cardamomo, meliloto, nardo
Gallico, panace, sampsucho, helenio, cinnamomi
radice, omnium sucis in oleo maceratis expressisque.
sic et rhodinum a rosis, iuncinum e iunco quod est
rosaceo simillimum, item hyoscyamo et lupinis,
narcisso. plurimum autem in Aegypto e raphani se-
mine aut graminis [2] herba [3] quod chortinon vocant,
31 item e sesima et urtica quod cnidinum appellant. e
lilio et alibi fit sub diu sole, luna, pruina maceratum.
suis herbis componunt inter Cappadociam et Gala-
tiam quod Selgiticum vocant, nervis admodum utile,
sicut in Italia Iguvini. e pice fit quod pissinum
appellant, cum coquitur, velleribus supra halitum

[1] *Mayhoff*: ni. [2] *Rackham*: gramine.
[3] *V.l.* herbae.

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[a] From χόρτος, grass.
[b] From κνίδη, nettle.

sesame and rice, and the Fish-eater tribes from fish. Scarcity sometimes compels people to make oil for lamps even out of the berries of the plane-tree by steeping them in water and salt. There is also an oil made from the wild vine—we have spoken about the plant itself while dealing with perfumes. For XII. 132.
gleucinum must is boiled in oil with a slow heat, but other makers do not use fire but leave the jar packed round with grape-skins for three weeks, stirring up the mixture twice a day, and the must becomes absorbed by the oil. Some people mix in not only marjoram but also more expensive scents, just as the oil used in the gymnastic schools is also perfumed with scents, though of a very poor quality. Oil is also made from aspalathus, reed, balsam, iris, cardamomum, melilot, Gallic nard, all-heal, marjoram, helenium, and cinnamomum root, by steeping all these plants in oil and then pressing out the juices. Similarly also rose-oil is made from roses, and rush-oil, which is very similar to oil of roses, from the sweet rush, and likewise oils are extracted from henbane and from lupins and narcissus. A very large amount is obtained in Egypt from radish seed or from the blade of the grass called chortinon,[a] and likewise from sesame and from the nettle called cnidinum.[b] In other places also an oil is made from lilies, which is left in the open air to steep in the sunlight and moonlight and frost. On the border of Cappadocia and Galatia they make from native herbs an oil called Selgitic oil, of considerable value for the tendons; and the same oil is made in Italy by the people of Gubbio. From pitch is made an oil called pitch-oil; while the pitch is kept on the boil, fleeces are stretched above the steam rising from it and then wrung out.

eius expansis atque ita expressis, probatum maxime e Bruttia; est enim pinguissima et resinosissima.
32 color oleo fulvus. sponte nascitur in Syriae maritimis quod elaeomeli vocant. manat ex arboribus pingue, crassius melle, resina tenuius, sapore dulci, utile[1] et hoc medicis. veteri quoque oleo usus est ad quaedam genera morborum, existimaturque et ebori vindicando a carie utile esse: certe simulacrum Saturni Romae intus oleo repletum est.

33 VIII. Super omnia vero celebravit amurcam laudibus Cato: dolia olearia cadosque illa imbui ne bibant oleum; amurca subigi areas terendis messibus ut formicae rimaeque absint; quin et lutum parietum ac tectoria et pavimenta horreorum frumenti, vestiaria etiam contra teredines ac noxia animalium amurca adspergi, semina frugum perfundi. morbis quadripedum, arborum quoque illa medendum, efficace ad ulcera interiora humani quoque oris.
34 lora etiam et coria omnia et calceamina axesque decocta ungui, atque aeramenta contra aeruginem colorisque gratia elegantioris, et totam supellectilem ligneam ac vasa fictilia in quis ficum aridam libeat adservare, aut si folia bacasque in virgis myrti aliudve quod genus simile. postremo ligna macerata amurca nullo fumi taedio ardere.

[1] utile *add. Warmington.*

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[a] From ἔλαιον, olive-oil and μέλι, honey.

The most approved kind comes from the Bruttian land; the pitch there is very rich and full of resin. The colour of pitch-oil is reddish yellow. There is an oil that grows of its own accord in the coastal parts of Syria called elaeomeli.[a] It is a rich oil that trickles from trees, of a substance thicker than honey but thinner than resin, and having a sweet flavour; this also is used by the doctors. There is also a use of old olive-oil for certain kinds of diseases, and it is also deemed to be serviceable for preserving ivory from decay: at all events, the inside of the statue of Saturn at Rome has been filled with oil.

VIII. But it is above all to the lees of olive-oil that Cato has devoted his praises: he tells how vats and casks to hold oil are steeped in lees to prevent their soaking up the oil; how threshing-floors are given a dressing of lees to keep away ants and to prevent cracks; and moreover how the clay of the walls and the plaster and flooring of granaries, and even cupboards for clothes, are sprinkled with lees, and how seed-corn is steeped in them, as a protection against wood-worms and injurious insects. He speaks of its use as a remedy for diseases of animals and also of trees, and also as a specific against ulceration of the mouth in human beings. He says that reins and all leather articles, and shoes and the axles of wheels are greased with boiled lees, and so are copper vessels to keep off verdigris and to give them a more attractive colour, and all wooden utensils and earthenware jars used for keeping dried figs in, or it may be sprays of myrtle with their leaves and berries on them or anything else of a similar kind. Finally he states that logs of wood steeped in olive-lees will burn without any annoying smoke.

Uses of amurca. *R.R.* CXXX, XCI. ff.

Oleam si lambendo capra lingua contigerit depaveritque primo germinatu, sterilescere auctor est M. Varro.

Et hactenus de olea atque oleo.

35 IX. Reliqui arborum fructus vix specie figurave, non modo saporibus sucisque, totiens permixtis atque insitis, enumerari queunt.

Grandissimus pineis nucibus altissimeque suspensus, intus exiles nucleos lacunatis includit toris, vestitos alia ferruginis tunica, mira naturae cura molliter semina conlocandi. harum genus alterum Tarentinae digitis fragili putamine aviumque furto
36 in arbore. et tertium sappiniae[1] e picca sativa, nucleorum cute verius quam putamine adeo molli ut simul mandatur. quartum pityida[2] vocant e pinastris, singularis remedii adversus tussim in melle decoctis nucleis: Taurini ravicelos vocant. pinea corona victores apud Isthmum coronantur.

37 X. His proxima amplitudine mala quae vocamus cotonea et Graeci cydonea ex Creta insula advecta. incurvatos trahunt ramos prohibentque crescere parentem. plura eorum genera: chrysomela incisuris distincta colore ad aurum inclinato, qui

[1] *Hardouin*: sappini.
[2] *Hermolaus*: pitydia.

[a] From *ravus*, 'hoarse.'
[b] From Cydonea, now Canea, a city in Crete. The Latin name is merely a perversion of the Greek.

According to Marcus Varro an olive-tree which has been merely licked by the tongue of a she-goat or which she has nibbled when it was first budding goes barren. *R.R.* 100.

So far in regard to the olive and olive-oil.

IX. The rest of the fruits produced by trees can scarcely be enumerated by their appearance or shape, let alone by their flavours and juices, which have been so frequently modified by crossing and grafting. *Other fruit trees.*

The largest fruit and the one that hangs highest is that of pine-cones, which encloses inside it small kernels lying in fretted beds and clothed in another coat of rusty colour, showing the marvellous care that Nature takes to provide seeds with a soft place to lie in. A second class of pine-cones is that of the Taranto pine, which has a shell that can be broken in the fingers and which is rifled by the birds while on the tree. A third kind is that of the sappinia-cone which grows on the cultivated pitch-pine, the kernels of which have such a soft husk, or rather skin, that it is eaten with them. A fourth kind is called pityis, growing on wild pines, which provides an exceptionally good remedy against a cough when the kernels are boiled in honey; the people of Turin call them raviceli.[a] The winners in the games at the Isthmus are crowned with a wreath of pine leaves. *Pine nuts.*

X. The fruit next to these in size is the one that we call the quince and the Greeks cydoneum,[b] which was introduced from the island of Crete. This fruit drags down the boughs in a curve and checks the growth of the parent tree. There are several kinds of quinces: the 'golden apple' is cleft with incisions and has a colour verging on gold, a brighter tinge *Quinces.*

candidior nostratia cognominat, odoris praestantis-
38 simi. est et Neapolitanis suus honos. minora ex eodem genere struthea odoratius vibrant, serotino proventu, praecoci vero mustea. strutheis autem cotonea insita suum genus fecere Mulvianum, quae sola ex his vel cruda manduntur, iam et virorum salutatoriis cubiculis inclusa ac simulacris noctium consciis inposita. sunt praeterea parva silvestria, e strutheis odoratissima et in saepibus nascentia.

39 XI. Mala appellamus, quamquam diversi generis, Persica et granata, quae in Punicis arboribus novem generum dicta sunt. his acinus sub cortice intus, illis lignum in corpore. nec non et quaedam e piris libralia appellata amplitudinem sibi ponderis nomine adserunt. sed Persicorum palma duracinis: nationum habent cognomen Gallica et Asiatica.
40 post autumnum maturescunt Asiatica, aestate praecocia intra xxx annos reperta et primo denariis singula venumdata. supernatia e Sabinis veniunt, popularia undique. pomum innocuum expetitur aegris, pretiumque iam singulis triceni nummi fuere, nullius maiore, quod miremur, quia non aliud fuga-

[a] *I.e.*, apparently, *malum aureum*.
[b] *I.e.* statues of deities standing in bedrooms.
[c] The Adriatic sea was called Mare Superum, 'Upper Sea'.

of which gives a name [a] to our native quince, and has an exquisite scent. The Naples quince is also highly esteemed. The smaller variety of the same kind, the sparrow-apple, gives out a rather pungent smell, and ripens late, whereas the must-quince ripens very early. Grafting the ordinary quince on the sparrow-apple has produced a special kind, the Mulvian quince, which is the only one of the quinces that is eaten even raw; these at the present day are kept shut up in gentlemen's reception-rooms, and are placed on the statues that share our nights with us.[b] There is also a small wild quince, the scent of which is the most powerful next to that of the sparrow-apple and which grows in the hedges.

Peaches and pomegranates

XI. We give the name of apples, although they really belong to a different kind, to peaches and to pomegranates, of which we have specified nine kinds XIII. 112. among the trees of Carthage. Pomegranates contain a kernel enclosed in a skin, but peaches have a hard stone inside them. Moreover one variety of pear called the pound pear asserts by its name the largeness of its weight. But the palm among peaches belongs to the nectarine: the Gallic and the Asiatic varieties are named after their nationalities. The Asiatic peach ripens at the end of autumn, though an early variety ripens in summer—these were discovered within the last thirty years, and were at first sold for a denarius apiece. The Adriatic [c] peach comes from Samnium, but the common peach grows everywhere. It is a harmless fruit, in demand for invalids, and peaches have before now fetched thirty sesterces each, a price exceeded by no other fruit—which may surprise us, because there is none

cius: longissima namque decerpto bidui mora est cogitque se venumdari.

41 XII. Ingens postea turba prunorum: versicoloria e nigro candicant,[1] hordearia appellata a comitatu frugis eius; alia eodem colore seriora maioraque, asinina cognominata a vilitate. sunt minora at[2] laudatiora cerina atque purpurea, nec non ab externa gente Armeniaca, quae sola et odore commendantur. peculiaris inpudentia est nucibus insitorum quae faciem parentis sucumque adoptionis exhibent,
42 appellata ab utroque nucipruna. et haec autem et Persica et cerina ac silvestria ut uvae cadis condita usque ad alia nascentia aetatem sibi prorogant, reliquorum velocitas cito mitescentium transvolat. nuper in Baetica malina appellari coeperunt malis insita et alia amygdalina amygdalis: his intus in ligno nucleus amygdalae est, nec aliud pomum ingeni-
43 osius geminatum est. in peregrinis arboribus dicta sunt Damascena a Syriae Damasco cognominata, iam pridem in Italia nascentia, grandiore quamquam ligno et exiliore carne nec umquam in rugas siccata, quoniam soles sui desunt. simul dici possunt popu-

[1] *Sillig*: versicolori nigra candicans *aut* v.n. candida.
[2] *Mayhoff*: sunt ac nigra ac.

which keeps worse: the longest time that it will last after being plucked is two days, and it compels you to put it on the market.

XII. Afterwards comes a vast crowd of plums. *Plums; twelve sorts.* There is the parti-coloured plum, partly black and partly white in colour, which is called the barley-plum because it ripens at barley harvest; and another plum of the same colour, which is later and is larger in size, called the donkey-plum from its inferior value. The wax-plum and the purple plum are smaller in size but more esteemed; and there is also the Armenian plum, imported from foreign parts, the only plum that recommends itself even by its scent. *Cf.* XVI. 103. Plums grafted on a nut-tree show a remarkable effrontery, displaying the appearance of the parent tree and the juice of the adopted stock; they take their name from each, being called nut-plums. But both the nut-plum and the peach and the wax-plum and the wild plum, if stored in casks like grapes, will prolong their life till another crop begins to come into existence, but the remaining varieties, ripening quickly, speedily pass off. Recently in Baetica the name of apple-plum has begun to be given to plums grafted on apple-trees, and that of almond-plum to others grafted on almonds: the latter have the kernel of an almond inside their stone; and indeed no other fruit has been more ingeniously crossed. Among our foreign trees, we have already spoken of the damson, named from Damascus in Syria; it has been grown in Italy for a long time, though it has a larger stone and less flesh here than in its country of origin, and here it never dries into wrinkles, because it lacks its native sunshine. With it can be mentioned its fellow-countryman

lares eorum myxae, quae et ipsae nunc coeperun Romae nasci insitae in sorbis.

44 XIII. In totum quidem Persica peregrina etiam Asiae Graeciaeque esse ex nomine ipso apparet, atque ex Perside advecta. sed pruna silvestria ubique nasci certum est, quo magis miror huius pomi mentionem a Catone non habitam, praesertim cum condenda
45 demonstraret quaedam et silvestria. nam Persicae arbores sero et cum difficultate transiere, ut quae in Rhodo nihil ferant, quod primum ab Aegypto earum fuerat hospitium. falsum est venenata cum cruciatu in Persis gigni et poenarum causa ab regibus translata in Aegyptum terra mitigata; id enim de persea diligentiores tradunt, quae in totum alia est myxis rubentibus similis nec extra orientem nasci voluit.
46 eam quoque eruditiores negaverunt ex Perside propter supplicia translatam, sed a Perseo Memphi satam, et ob id Alexandrum illa coronari victores ibi instituisse in honorem atavi sui. semper autem folia habet et poma subnascentibus aliis. sed pruna quoque omnia post Catonem coepisse manifestum erit.

47 XIV. Malorum plura sunt genera. de citreis cum sua arbore diximus, Medica autem Graeci vocant

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[a] The *persea* is the modern *Mimusops Schimperi*, and the *myxa* is the modern *sebesten*.

[b] Instituted by Alexander in honour of the hero Perseus, son of Zeus, from whom he claimed descent.

the myxa, which also has now begun to be grown at Rome by being grafted on the service-tree.

XIII. The Persian plum or peach, it is true, is *The peach.* shown by its very name to be an exotic even in Asia Minor and in Greece, and to have been introduced from Persia. But the wild plum is known to grow everywhere, which makes it more surprising that this fruit is not mentioned by Cato, especially as he pointed out the way of storing some wild fruits also. As for the peach-tree, it was only introduced lately, and that with difficulty, inasmuch as in Rhodes, which was its first place of sojourn after leaving Egypt, it does not bear at all. It is not true that the peach grown in Persia is poisonous and causes torturing pain, and that, when it had been transplanted into Egypt by the kings to use as a punishment, the nature of the soil caused it to lose its dangerous properties; for the more careful writers relate this of the persea,[a] which is an entirely different tree, resembling the red myxa, and which has refused to grow anywhere but in the east. The sebesten also, according to the more learned authorities, was not introduced from Persia for punitive purposes, but was planted at Memphis by Perseus, and it was for that reason that Alexander, in order to do honour to his ancestor, established the custom of using wreaths of it for crowning victors in the games[b] at Memphis. It always has leaves and fruit upon it, fresh ones sprouting immediately after the others. But it will be obvious that all our plums also have been introduced since the time of Cato.

XIV. Of the apple class there are a number of *The apple class: many varieties.* varieties. We have spoken of citrons when describing the citron-tree; the Greeks, however, call them XIII. 103.

patriae nomine. aeque peregrina sunt zizipha et tuberes, quae et ipsa non pridem venere in Italiam, haec ex Africa, illa ex Syria. Sex. Papinius, quem consulem vidimus, primus utraque attulit divi Augusti novissimis temporibus in castris sata, bacis similiora quam malis, sed aggeribus praecipue decora, quoniam et in tecta iam silvae scandunt. tuberum duo genera, candidum et a colore Syricum
48 dictum. paene peregrina sunt in uno Italiae agro Veroniensi nascentia quae lanata appellantur: lanugo ea obducit, strutheis quidem Persicisque plurima, his tamen peculiare nomen dedit nulla alia commendatione insignibus.

49 XV. Reliqua cur pigeat nominatim indicare, cum conditoribus suis aeternam propagaverint memoriam, tamquam ob egregium aliquod in vita factum? nisi fallor, apparebit ex eo ingenium inserendi, nihilque tam parvum esse quod non gloriam parere possit. ergo habent originem a Matio Cestioque et Mallio, item Scaudio—quibus cotoneo insito ab Appio e
50 Claudia gente Appiana sunt cognominata; odor est his cotoneorum, magnitudo quae Scaudianis, color

'Medic apples,' after their native country. Equally foreign are the jujube-tree and the tuber-apple, which themselves also have only recently come into Italy, the former from Africa and the latter from Syria. Sextus Papinius, who was consul in our own day, introduced each of them in the last years of the principate of his late Majesty Augustus, having grown them in his camp from slips; the fruit is more like a berry than an apple, but the trees make a particularly good decoration for terraces—as nowadays we have whole forests of vegetation growing even over the roofs of our houses. There are two kinds of tuber-apple, the white and the red Syrian, so called from its colour. The fruit called wool-fruit, growing in the district of Verona but nowhere else in Italy, is virtually an exotic; it is covered with a woolly down, which grows also in very large quantities on the sparrow-quince and the peach, but which has given its name to this fruit in particular as it has no other remarkable property to recommend it. A.D. 23.

Fruit trees recently introduced from abroad.

XV. Why should I hesitate to indicate by name the remaining varieties of fruit, seeing that they have prolonged the memory of those who established them for all time, as though on account of some outstanding achievement in life? Unless I am mistaken, the recital will reveal the ingenuity exercised in grafting, and will show that nothing is so trifling as to be incapable of producing celebrity. Well then, there are kinds of fruit that have their origin from Matius and Cestius, from Mallius, and likewise from Scaudius; and on the last a member of the Claudian family named Appius grafted the quince, producing the fruit called Appian; this has the smell of a quince, the size of a Scaudian apple, and a ruddy colour.

rubens. ac ne quis ita[1] ambitu valuisse claritatis et familiae putet, sunt et Sceptiana ab inventore libertino, insignia rotunditate. Cato adicit Quiriniana[2] et quae tradit in doliis condi Scantiana. omnium autem nuperrime adoptata sunt parva gratissimi saporis quae Petisia nominantur. patrias nobi-
51 litavere Amerina et Graecula; cetera e causis traxere nomen: germanitatis cohaerentia[3] gemella numquam singula in fetu, colore syrica, cognatione melapia; mustea a celeritate mitescendi, quae nunc melimela dicuntur a sapore melleo; orbiculata a figura orbis in rotunditatem circumacti—haec in Epiro primum provenisse argumento sunt Graeci qui Epirotica vocant, mammarum effigie orthomastia, a conditione castrati seminis quae spadonia
52 appellant Belgae. melofoliis folium unum, aliquando et geminum, erumpit e latere medio; celerrime in rugas marcescunt pannucea; solide[4] tument pulmonea. est quibusdam sanguineus colos origine ex mori insitu tracta; cunctis vero quae fuere a sole partes rubent. sunt et parva gratia saporis atque etiam acutiore[5] odore silvestria; peculiare improbae iis[6] acerbitatis convicium et vis tanta ut aciem gladii praestringat. dat aliis[7] farina nomen, vilissi-

[1] ita? *Mayhoff*: id.
[2] *Pintianus*: Quiriana.
[3] *Mayhoff*: cohaerentia et.
[4] solide? *Mayhoff*: stolide.
[5] *Rackham*: acutiora.
[6] *Mayhoff*: improbatis *aut* improbitatis.
[7] dat aliis *Mayhoff*: datis.

[a] Greek for 'erect teat.'

And in order that nobody may imagine that it has gained its position by influence due to distinction and family, there is also a Sceptian apple named from a freedman who discovered it, which is remarkable for its round shape. Cato also mentions a Quirinian apple, and a Scantian which he says is stored in casks. *R.R.* VII. 3, CXLIII. 3. But the apple naturalized here most recently of all is a small one with a most agreeable flavour named the Petisian. The Amerian and the Little Greek apples have advertised their places of origin, but all the rest have derived their name from definite reasons—'twin' apples from their attachment of relationship, as they never grow singly, the 'Syrian red' from its colour, the pear-apple from its affinity; the must-apple was named from its quickness in ripening, but is now called the honey-apple from its honey flavour; the round apple from its shape, which forms an exact sphere—the Greeks, who call this apple the Epirotic apple, prove that it was first produced in Epirus; the orthomastium [a] is so called from its resemblance to a teat, and the eunuch-apple of the Belgians is named from its having no pips. The leaf-apple has a single leaf, or occasionally a pair of leaves, sprouting out from the middle of its side; the ragged-apple very quickly shrivels up into wrinkles; the lung-apple swells in a solid lump. Some apples are of the colour of blood, because they derive their origin from a graft of the mulberry; but all apples are red in the parts that have been turned towards the sun. There are also wild apples with little attraction of flavour and an even sharper scent; their special fault is that of horrible sourness, and it is so powerful that it will blunt the edge of a sword. Another apple is named 'flour-apple,' a very bad

mis,[1] quamquam primis adventu decerpique properantibus.

53 XVI. Eadem causa in piris taxatur superbiae cognomine; parva haec, sed ocissima. e [2] cunctis autem Crustumia gratissima. proxima his Falerna potu, quoniam tanta vis suci abundat—lactere [3] hoc vocatur—in hisque alia colore nigro, dona [4] Syriae. reliquorum nomina aliter in aliis atque aliis locis
54 appellantur; sed confessis urbis vocabulis auctores suos nobilitavere Decimiana et ex eo tractum quod Pseudodecimianum vocant, Dolabelliana longissimi pediculi, Pomponiana cognomine mammosa, Liceriana, Seviana et quae ex his nata sunt Turraniana longitudine pediculi distantia, Favoniana rubra paulo superbis maiora, Lateriana, Aniciana postautumnalia acidulo sapore iucunda. Tiberiana appellantur quae maxime Tiberio principi placuere; colorantur magis sole grandescuntque, alioquin eadem essent
55 quae Liceriana. patriae nomina habent serissima omnium Amerina, Picentina, Numantina, Alexandrina, Numidiana, Graeca et in iis Tarentina, Signina, quae alii a colore testacea appellant, sicut onychina, purpurea, ab odore myrapia, laurea, nardina, tempore hordiaria, collo ampullacea; et

[1] nomen, vilissimis? *Mayhoff*: vilissimis nomen.
[2] e *add. Mayhoff.*
[3] *Mayhoff*: lactem.
[4] *Mayhoff*: donant.

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[a] *I.e.* an equally early kind of pear is called the 'proud' pear.

kind, although it is the earliest to come on and hastens to be picked.

XVI. The same charge in the case of pears is censured by the name of pride [a]; this is a small pear, but ripens very quickly. Of all the varieties of pear, however, the Crustumian is the nicest. Next to this are Falernian pears, used for perry, as they contain such a large quantity of juice—this is called being 'milky'—and among these are some others of a very dark colour, given us by Syria. The names of the remaining varieties are designated differently in various different localities; but pears that have advertised their producers by the accepted designations of Rome are the Decimian, and the offshoot from it called the Sham Decimian, the very long-stalked one called the Dolabellian, the kind of Pomponian called breast-shaped, the Licerian, the Sevian, and the Turranian, a variety sprung from the Sevian but differing in length of stalk, the Favonian, a red pear a little larger than the 'proud' pear, the Laterian and the Anician, which comes when autumn is over and has an agreeably acid flavour. One pear is called the Tiberian, which was a special favourite of the Emperor Tiberius; it is more coloured by the sun and grows to a larger size, but otherwise would be the same as the Licerian. Pears having the name of their place of origin are the Amerian, the latest of all kinds, the Picentine, the Numantine, the Alexandrian, the Numidian, the Greek, a variety of which is the Tarentine, and the Signine, which some people call the tile-pear from its colour, like the onyx-pear and the purple pear; while named from their scent are the myrrh-pear, the bay-leaf pear and the nard-pear; named from its season the barley-pear; from Pears.

Coriolana, Bruttia gentilitatis causa,[1] cucurbitina,
56 acidula suci. incerta nominum causa est barbaricis Veneriis quae[2] colorata dicunt, regiis quae minimo pediculo sessilia, patriciis, vocimis, viridibus oblongisque. praeterea dixit volema Vergilius a Catone sumpta, qui et sementiva et mustea nominat.

57 XVII. Pars haec vitae iampridem pervenit ad columen, expertis cuncta hominibus, quippe cum Vergilius insitam nucibus arbutum, malis platanum, cerasis ulmum dicat. nec quicquam amplius excogitari potest: nullum certe pomum novum diu iam invenitur. neque omnia insitu[3] misceri fas est, sicut nec spinas inseri, quando fulgura[4] expiari non queunt facile; quotque genera insita fuerint, tot fulgura uno ictu fieri pronuntiatur.

58 Turbinatior piris figura. in iis serotina ad hiemem usque in matre pendent gelu maturescentia Graeca, ampullacea, laurea, sicut in malis Amerina, Scaudiana. conduntur vero pira ut uvae, ac totidem modis, neque aliud in cadis praeterquam pruna. e pomis[5] proprietas piris quae[6] vinis,[7] similiterque in

[1] causa *add. Rackham.*
[2] *Mayhoff*: que.
[3] *Hardouin*: insita.
[4] *V.l.* fulgurata.
[5] *Mayhoff*: prunae. pomis.
[6] *Mayhoff*: que.
[7] *Rackham*: vini.

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[a] Some editors have altered the unknown word *vocimis* to *Voconiis*, naming the pear after a family.

[b] This identification is doubtful, but it was a large pear, a 'handful' (*vola*, the hollow of the hand or the arch of the foot, cf. XI. 204); see Cato *R.R.* VII. 3, Virg. *Georg.* II. 88.

its long neck, the bottle-pear; and the Coriolan and Bruttian pears are so called because of their connexion with certain races, and the gourd-pear and the sourish pear because of their juice. Pears the reason for the names of which is uncertain are the barbarian, the variety of Venus pear called the coloured Venus, the royal pear called the squat pear because of its very short stalk, the patrician pear, and the vocimum,[a] a green kind of an oblong shape. Virgil has also mentioned a warden pear,[b] which he gets from Cato, who also specifies a 'seed-time pear' and a 'must-pear.'

XVII. This department of life has long ago arrived at its highest point, mankind having explored every possibility, inasmuch as Virgil speaks of grafting nuts on an arbutus, apples on a plane and cherries on an elm. And nothing further can be devised—at all events it is now a long time since any new kind of fruit has been discovered. Moreover, religious scruples do not permit us to cross all varieties by grafting; for instance, we must not graft upon a thorn, inasmuch as it is not easy to expiate thunderbolts when they have struck them, and it is declared that the same number of bolts will strike it in a single flash as the kinds of trees that have been grafted on it. *Grafting.* *Georg. II. 69.*

Pears have a more tapering shape than apples. The late kinds among them hang on the mother tree till winter and ripen with the frost—the Greek pear, the bottle pear, the bay-leaf pear; as also among apples do the Amerian and Scaudian varieties. Pears are put in storage like grapes, and in as many different ways, and are the only fruit kept in casks except plums. Of all the apple kind pears have *Keeping and use of pear.*

aegris medentes cavent. e vino et aqua coquuntur atque pulmentari vicem inplent, quod non alia praeter cotonea ac struthea.

59 XVIII. In universum autem de pomis servandis praecipitur pomaria in loco frigido ac sicco contabulari, septentrionalibus fenestris sereno die patere, austros specularibus arceri,[1] aquilonis quoque adflatu poma deturpante rugis, colligi mala post aequinoctium autumni, neque ante XVI lunam neque ultra duodetricesimam, nec pluvio die neque ante primam horam, cadiva separari, stramentis solidis paleisve substerni, rara componi ut limites pervii spiritum aequalem accipiant. Amerina maxime durare,
60 melimela minime. cotoneis in loco cluso[2] spiramentum omne adimendum aut incoqui melle ea mergive oportere. Punica aqua marina fervente indurari, mox triduo sole siccata ita ne nocturno rore contingantur suspendi, et cum libeat uti, aqua dulci perlui. M. Varro et in doliis harenae servari iubet et inmatura obrui terra in ollis fundo effracto sed spiritu excluso ac surculo pice inlito: sic etiam

[1] arceri? *Mayhoff*: arcere.
[2] *Rackham*: in concluso.

the quality of wines, and like wine they are avoided by doctors in the treatment of the sick. Boiled in wine and water they make a sort of jam, as does no other fruit except the quince and the sparrow-apple.

XVIII. In regard to keeping fruit it is universally recommended that fruit-lofts should be constructed in a cool and dry place, with boarded floors and windows facing north that are left open on a fine day, and with glazed windows to keep out south winds, the draught from a north-east wind also spoiling the appearance of the fruit by making it shrivelled; that apples should be gathered after the autumn equinox, and not before the 16th day of the moon nor later than the 28th, nor on a rainy day, nor till an hour after sunrise; that windfalls should be kept separate; that the fruit should have a bed of close-packed straw or of chaff underneath, and should be placed far apart so that the spaces between the rows may admit a uniform draught. It is said that the Ameria apple is the best keeper and the honey-apple the worst. It is recommended that quinces should be stored in a place kept shut up, from which all draughts are excluded, or else that they should be boiled or soaked in honey. Pomegranates should be hardened in boiling sea-water and then dried in the sun for three days and hung up in such a way as to be protected from the dew at night, and when wanted for use they should be thoroughly washed in fresh water. Marcus Varro recommends keeping them in large jars of sand, and also while they are unripe covering them with earth in pots with the bottom broken out but with all air shut out from them and with their stalk smeared with pitch, as so kept they grow to an

Methods of storing fruit.

crescere amplitudine maiore quam possint in arbore. cetera mala et foliis ficulnis, praeterquam cadivis, singula convolvi cistisque vitilibus condi vel creta
61 figulinarum inlini. pira in vasis fictilibus picatis inversis obrui terra in scrobe.[1] Tarentina serissima legi, Aniciana servari et in passo, sorba quoque, et scrobibus gypsato operculo, duum pedum terra superiniecta, in loco aprico, inversis vasis, et in doliis ut uvas cum ramis suspendi.

62 E proximis auctoribus quidam altius curam repetunt, deputarique statim poma ac vites ad hunc usum praecipiunt decrescente luna, post horam diei tertiam, caelo sereno aut siccis ventis. similiter deligi et ex locis siccis et ante perfectam maturitatem, addito ut luna infra terram sit, uvas cum malleolo sarmenti duro, demptis forfice corruptioribus acinis, in dolio picato recenti suspendi, exclusa omni aura operculo et gypso. sic et sorba ac pira, inlitis omnium surculis pice. dolia procul ab aqua esse.
63 quidam sic cum palmite ipso condunt, capitibus eius

[1] *Rackham*: obrui inter scrobae *aut* obrui scrobe.

even larger size than they could possibly attain on the tree. He says that all other fruit of the apple kind should also be wrapped up separately in fig-leaves (but not leaves that have fallen off) and stored in wicker baskets or else smeared over with potters' earth. He says that pears should be stored in earthenware jars which should be covered with pitch and placed bottom upwards in a hole in the ground with earth heaped over them. He recommends gathering the Taranto pear very late; and keeping the Anician and also sorb-apples in raisin wine, and putting them in holes dug in the ground in a sunny place, with the lid of the jar plastered up and two feet of earth heaped on top of it, the vessels being placed bottom upward; and he also recommends hanging them together with their branches, like grapes, in large jars.

Picking for storage, and precautions for keeping.

Some of the most recent writers examine deeper into the matter, and recommend that fruit and grapes should be picked early for the purpose of storage, when the moon is waning, after nine o'clock in the morning, in fine weather or with a dry wind blowing. Likewise they say that the fruit ought to be chosen from dry places and also before it is completely ripe, with the further condition that the moon must be below the horizon; and that the grapes with their hard hammer-shoot of stalk, after the rather rotten berries have been removed with a pair of scissors, should be hung up inside a fresh-tarred cask, with all air shut out by the lid and by plaster. They recommend the same method for storing sorb-apples and pears, the stalks of all having been smeared with pitch. They say that the casks must not be kept anywhere near water. Some people store them in this way together with the branch itself, with each of

scillae infixis utrimque, alii etiam vina habentibus doliis, dum ne contingant ea uvae, aliqui mala in patinis fictilibus fluitantia, quo genere et vino odorem adquiri putant. aliqui omnia haec in milio servari malunt, plerique vero in scrobe duum pedum altitudinis harena substrato et fictili operculo, dein terra
64 operto. creta quidam figlina etiam uvas inlinunt siccataque sole suspendunt, in usu diluentes cretam. eandem pomis vino subigunt. mala vero generosissima eadem ratione crustant gypso vel cera, quae nisi maturaverint incremento calcem rumpunt; semper autem in pediculos conlocant ea. alii decerpunt cum surculis eosque in medullam sabuci
65 abditos obruunt ut supra scriptum est. alii singulis malis pirisque singula vasa fictilia adsignant et operculo eorum picato[1] dolio iterum includunt, nec non aliqui in floccis capsisque quas luto paleato inlinunt, alii hoc idem in patinis fictilibus, aliqui et in scrobe subiecta harena, ita sicca operiunt mox terra. sunt qui cotonea cera Pontica inlita melle demergant.
66 Columella auctor est in puteos cisternasve uvas[2] in fictilibus vasis pice diligenti cura inlitis mergi.

[1] *Dalec.*: operculum . . . picatum.
[2] uvas *add. Mayhoff.*

its ends stuck into a squill; others hang them in casks still containing wine, but taking care that the grapes do not touch the wine; some store apples floating in wine in earthenware dishes, by which method they think a scent is given to them by the wine. Some prefer to preserve all fruit of this kind in millet, but most people think it is best kept in a hole in the ground two feet deep with a layer of sand under the fruit and covered with an earthenware lid and then with soil. Some even smear grapes with potters' clay, dry them in the sun and hang them up, washing off the clay when they are required for use. In the case of fruits, they get rid of the clay by means of wine. By the same method they coat the finest kind of apples with plaster or wax, but if the fruit is not already ripe it breaks the coating by growing in size; but they always store the apples with their stalks downward. Other people pluck the apples together with the branches, the ends of which they thrust into elder pith and then bury, as described above. Others § 63.
assign a separate clay vessel to each apple and pear, and after sealing up the opening of the vessels with pitch enclose them again in a cask; also some store the fruit, packed in flocks of wool, in cases which they smear with clay mixed with chaff; others follow the same plan using earthenware pans to put them in; and also some store them in a hole on a layer of sand, and so later cover them up with dry earth. There are some who give quinces a coat of Pontic wax and then dip them in honey. Columella recommends storing grapes in earthenware vessels that have been very carefully smeared with a coating of pitch, and sinking them into wells or

Liguria maritima Alpibus proxima uvas sole siccatas iunci fasceis involvit cadisque conditas gypso includit. hoc idem Graeci platani foliis aut vitis ipsius aut fici uno die in umbra siccatis atque in cado vinaceis interpositis; quo genere Coa uva et Berytia ser-
67 vantur, nullius suavitati postferendae. quidam ut has faciant in cinere lixivo tingunt protinus quam detraxere vitibus, mox in sole siccant passasque in aquam calidam mergunt et iterum sole siccant, tum foliis, ut supra dictum est, involutas vinaceis stipant. sunt qui malunt uvas in scobe ramentisve abietis, populi, fraxini servare; sunt qui suspendi procul malis protinusque in granariis iubent, quoniam optime siccet frumenti[1] pulvis. pensilibus contra vespas remedio est oleo adspergi ex ore. de palmis diximus.

68 XIX. E reliquo genere pomorum ficus amplissima est, quaedamque et piris magnitudine aemulae. de Aegyptiae Cypriaeque miraculis retulimus inter externas. Idaea rubet olivae magnitudine, rotundior tantum, sapore mespili. Alexandrinam hanc ibi vocant, crassitudine cubitali, ramosam, materie validam, lentam, sine lacte, cortice viridi, folio tiliae

[1] *Mayhoff*: optime sic experimenti.

cisterns. The part of seaboard Liguria nearest to the Alps dries its grapes in the sun, and wraps the raisins in bundles of rush and stores them in casks sealed up with plastered lime. The Greeks do the same, employing plane-tree leaves, the leaves of the vine itself or fig-leaves that have been dried for one day in a shady place, and putting grape-skins in the cask between the grapes; this is the method used for storing the grapes of Cos and of Beyrout, which are inferior to none in sweetness. Some people to make raisins dip the grapes in lye-ashes as soon as they have plucked them from the vines, and afterwards dry them in the sun and plunge the raisins into hot water and again dry them in the sun, and then wrap them up in leaves, making them into a tight bundle with grape-husks as described above. There are §66.
those who prefer to keep grapes in sawdust or in shavings of fir or poplar or ash wood; and there are some who advise hanging them in a granary, not near any apples, as soon as they are picked, because they say that the dust of the corn dries them best. A protection against wasps for bunches of grapes hung up is to sprinkle them with oil squirted out of the mouth. About palm-dates we have already spoken. XIII. 39.

Varieties of figs, and methods of growing. XIII. 56 *sq.*

XIX. Of the rest of the apple class the fig is the largest, and some figs rival even pears in size. We have spoken about the marvels of the Egyptian and Cypriote fig among the figs of foreign countries. That of Mount Ida is red, and is the size of an olive, only rounder in shape; it has the taste of a medlar. The local name of this tree is the Alexandrian fig; the trunk is eighteen inches thick and it spreads out in branches; it has a tough pliant wood, containing no juice, a green bark and a leaf like that of a lime but

sed molli. Onesicritus tradit in Hyrcania multum
nostris esse dulciores fertilioresque, ut quae modios
69 cclxx singulae ferant. ad nos ex aliis transiere genti-
bus, Chalcide, Chio, quarum plura genera, siquidem
et Lydiae, quae sunt purpureae, et mamillanae simi-
litudinem earum habent, et callistruthiae farti [1]
sapore praestantiores, ficorum omnium frigidissimae.
nam de Africanis, quoniam [2] multi praeferunt cunctis,
magna quaestio est, cum id genus in Africam nuper-
70 rime transierit. patriae nomen optinent etiam [3]
Alexandrinae e nigris, candicante rima, cognomine
delicatae; nigra et Rhodia est et Tiburtina de
praecocibus. sunt et auctorum nomina iis, Liviae,
Pompei: siccandis haec sole in annuos usus aptissima
cum mariscis et quas harundinum folii macula variat.
est et Herculanea et albicerata et aratia alba, pedi-
71 culo minimo, latissima. primo autem provenit
porphyritis, longissimo pediculo; comitatur eam e
minimis vilissima [4] popularis dicta. contra novissima
sub hiemem [5] maturatur chelidonia. sunt praeterea
eaedem serotinae et praecoces, biferae, alba ac nigra,
cum messe vindemiaque maturescentes. serotinae
et a corio appellatae duro, ex Chalcidicis quarundam

[1] *Mayhoff*: fartim *aut* partim.
[2] *Mayhoff*: quam (quas *edd.*).
[3] *Mayhoff*: nam.
[4] *Detlefsen*: vilissimis.
[5] *Rackham*: hieme.

soft to the feel. Onesicritus reports that the figs in Hyrcania are much sweeter than ours and the trees more prolific, a single tree bearing 270 pecks of fruit. Figs have been introduced among us from other countries, for instance, Chalcis and Chios—of the latter there are several varieties, inasmuch as Lydian figs, which are purple, and breast-shaped figs have a resemblance to the Chian; also the 'pretty-sparrow' figs, which are superior in the flavour of their flesh and are the coolest of all figs. For in regard to the African fig, as many people prefer it to the whole of the other kinds, there is a great question, inasmuch as this kind has only quite recently crossed over into Africa. Also among black figs the Alexandrian is named from its country of origin—it has a cleft of a whitish colour, and it is called the luxury fig; among figs that ripen early those of Rhodes and of Tivoli are also black. Early figs also have the names of the persons who introduced them—Livia, Pompey: the latter is the best for a fig to be dried in the sun for use throughout the year, together with the marsh fig and the fig with marks all over it shaped like a reed leaf. There are also the Herculaneum fig, the white-wax fig, and the white plough fig, with a very small stalk, a very flat-shaped kind. But the earliest fig is the purple fig, which has a very long stalk; it is accompanied by the worst of the very small kinds, called the people's fig. On the other hand the kind that ripens latest, just before winter, is the swallow fig. There are moreover figs that bear both late and early, yielding two crops, one white and one black, ripening with the harvest and with the vintage. There is also a late fig named from the hardness of its skin; some of the Chalcidic

trifero proventu. Tarenti tantum praedulces na-
72 scuntur quas vocant onas. Cato de ficis ita memorat: 'Ficos mariscas in loco cretoso aut aperto serito, in loco autem crassiore aut stercorato Africanas et Herculaneas, Saguntinas, hibernas, Telanas atras pediculo longo.' postea tot subiere nomina atque genera ut vel hoc solum aestimantibus appareat mutatam esse vitam. sunt et hibernae quibusdam provinciis, sicuti Moesiae, sed artis, non naturae.
73 parvarum genus arborum post autumnum fimo contegunt, deprehensasque in his hieme grossos, quae mitiore caelo refossae cum arbore atque in lucem remissae novos soles aliosque quam quibus vixere avide tamquam iterum natae accipiunt et cum venientium flore maturescunt, alieno praecoces anno, in tractu vel gelidissimo.

74 XX. Sed a Catone appellata iam tum Africana admonet ad [1] ingens docimentum usi eo pomo. namque pernitiali odio Carthaginis flagrans nepotumque securitatis anxius, cum clamaret omni senatu Carthaginem delendam, adtulit quodam die in curiam praecocem ex ea provincia ficum, ostendensque patribus: 'Interrogo vos,' inquit, 'quando hanc
75 pomum demptam putetis ex arbore?' cum inter

[1] *Detlefsen*: admonet Africae ad.

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[a] *I.e.* the sun is now the sun of spring, not of autumn.
[b] Moesia is the modern Bulgaria and S.E. Jugo-Slavia.

varieties of this kind bear three times a year. The extremely sweet fig called the ona grows only at Taranto. Cato makes the following remark about figs: 'Plant the marisca fig in a chalky or open place, but the African, Herculanean and Saguntine kinds, the winter fig and the black long-stalked Telanian in a richer soil or in one well manured.' Since his day so many names and varieties have arisen that a consideration of this alone is enough to show how our way of life has been transformed. Some provinces also have winter figs, for instance Moesia, but these are a product of art and not of nature. There is a small kind of fig-tree which is banked up with manure at the end of autumn and the figs on it are overtaken by winter while still unripe; and when milder weather comes the figs, together with the tree, are dug up again and restored to light; and just as if born again they greedily imbibe the warmth of the new sun, a different one from the sun through which they lived before,[a] and begin to ripen along with the blossom of the coming crop, maturing in a year that does not belong to them; the region is an extremely cold one.[b] *R.R.* VIII.1.

XX. But the variety which even in his day Cato termed the African fig reminds us of his having employed that fruit for a remarkable demonstration. Burning with a mortal hatred of Carthage and anxious in regard to the safety of his descendants, at every meeting of the senate he used to vociferate 'Down with Carthage!' and so on a certain occasion he brought into the house an early ripe fig from that province, and displaying it to the Fathers he said, 'I put it to you, when do you think this fruit was plucked from the tree?' Everybody agreed that it was quite *Historical anecdote about figs.*

omnis recentem esse constaret, 'Atqui tertium,' inquit, 'ante diem scitote decerptam Carthagine: tam prope a moeris habemus hostem!' statimque sumptum est Punicum tertium bellum quo Carthago deleta est, quamquam Catone anno sequente rapto. quid primum in eo miremur, curam ingenii an occasionem fortuitam, celeritatemque cursus an vehe-
76 mentiam viri? super omnia est, quo nihil equidem duco mirabilius, tantam illam urbem et de terrarum orbe per cxx annos aemulam unius pomi argumento eversam, quod non Trebia aut Trasimenus, non Cannae busto Romani nominis perficere potuere, non castra Punica ad tertium lapidem vallata portaeque Collinae adequitans ipse Hannibal: tanto propius Carthaginem pomo Cato admovit.

77 Colitur ficus arbor in foro ipso ac comitio Romae nata sacra fulguribus ibi conditis magisque ob memoriam eius qua[1] nutrix Romuli ac Remi conditores imperii in Lupercali prima protexit, ruminalis appellata quoniam sub ea inventa est lupa infantibus praebens rumin (ita vocabant mammam)—miraculo ex aere iuxta dicato, tamquam[2] comitium sponte transisset Atto Navio augurante. nec sine praesagio aliquo arescit rursusque cura sacerdotum

[1] *Rackham*: quae.
[2] *Rackham*: tanquam in.

fresh; so he said, 'O well, it was picked the day before yesterday at Carthage—so near is the enemy to our walls!' And they promptly embarked on the third Punic war, in which Carthage *was* brought down, although Cato had been taken from us the year after the incident narrated. What should we chiefly wonder at in this? ingenuity or chance coincidence? rapidity of transit or manly force of character? The crowning marvel, which I for my part think wonderful beyond parallel, is that so mighty a city, which for one hundred and twenty years had competed for the sovereignty of the world, was overthrown by the evidence of a single fruit—an achievement which not Trebbia or Trasimene, not Cannae with the tomb of Rome's glory, not the Carthaginian camp pitched three miles from the city and Hannibal in person riding up to the Colline gate were able to achieve: so much nearer did Cato bring Carthage to us by means of a single fruit!

A fig-tree growing in the actual forum and meeting-place of Rome is worshipped as sacred because things struck by lightning are buried there, and still more as a memorial of the fig-tree under which the nurse of Romulus and Remus first sheltered those founders of the empire on the Lupercal Hill—the tree that has been given the name of Ruminalis, because it was beneath it that the wolf was discovered giving her *rumis* (that was the old word for breast) to the infants—a marvellous occurrence commemorated in bronze close by, as though the wolf had of her own accord passed across the meeting-place while Attus Naevius was taking the omens. And it is also a portent of some future event when it withers away and then by the good offices of *Famous fig-trees at Rome.*

seritur. fuit et ante Saturni aedem urbis anno CCLX[1] sublata sacro a Vestalibus facto, cum Silvani
78 simulacrum subverteret. eadem fortuito satu vivit in medio foro, qua sidentia imperii fundamenta ostento fatali Curtius maximis bonis, hoc est virtute ac pietate ac morte praeclara, expleverat. aeque fortuita eodem loco est vitis, atque olea umbrae gratia sedulitate plebeia sata.[2] ara inde sublata gladiatorio munere divi Iuli quod novissime pugnavit in foro.
79 XXI. Admirabilis est pomi huiusce festinatio unius in cunctis ad maturitatem properantis arte naturae. caprificus vocatur e silvestri genere ficus numquam maturescens, sed quod ipsa non habet alii tribuens, quoniam est naturalis causarum transitus aeque[3] ut
80 e putrescentibus generatur[4] aliquid. ergo culices parit, hi fraudati alimento in matre e[5] putri eius tabe ad cognatam evolant, morsuque ficorum crebro, hoc est avidiore pastu,[6] aperientes ora earum atque ita penetrantes intus solem primo secum inducunt cerialesque auras inmittunt foribus adapertis. mox lacteum umorem, hoc est infantiam pomi,[7] absumunt,

[1] CCLX *add. edd.*
[2] *Rackham*: satae.
[3] *Detlefsen* (atque *aut* fitque *alii*): que.
[4] *Edd.*: gignatur.
[5] e *add. Rackham.*
[6] [hoc . . . pastu]? *Rackham.*
[7] [hoc . . . pomi]? *Rackham.*

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[a] In 362 B.C. a chasm opened in the forum, which the soothsayers said could only be filled by throwing into it Rome's greatest treasure. M. Curtius mounted his horse and leaped into it, and the earth closed over him. The spot was marked by a circular pavement, and called the Lacus Curtius (Livy I. 19, VII. 6).

[b] The *cynips psenes.*

[c] *I.e.* a cultivated fig.

[d, e] These two clauses look like interpolations.

the priests is replanted. There was also a fig-tree in front of the temple of Saturn, which in 404 B.C., after a sacrifice had been offered by the Vestal Virgins, was removed, because it was upsetting a statue of Silvanus. A tree of the same kind that was self-sown lives in the middle of the forum, at the spot where, when the foundations of the Empire were collapsing in portent of disaster, Curtius had filled up the gulf[a] with the greatest of treasures, I mean virtue and piety and a glorious death. Likewise self-sown is a vine in the same locality, and there is an olive planted by the care of the populace for the sake of the shade; an altar in the forum was removed on the occasion of the gladiatorial show given by his late Majesty Julius, the most recent one that fought in the forum.

XXI. A remarkable fact about the fig is that this alone among all the fruits hastens to ripen with a rapidity due to the skill of nature. There is a wild variety of fig called the goat-fig which never ripens, but bestows on another tree what it has not got itself, since it is a natural sequence of causation, just as from things that decay something is generated. Consequently this fig engenders gnats[b] which, being cheated out of nutriment in their mother tree, fly away from its decaying rottenness to the kindred tree,[c] and by repeatedly nibbling at the figs—that is by feeding on them too greedily[d]—they open their orifices and so make a way into them, bringing with them the sun into the fruit for the first time and introducing the fertilizing air through the passages thus opened. Then they consume the milky juice—this is the symptom of the fruit's infancy[e]—which also dries up of its own accord; and *Fig-growing; caprification.*

quod fit et sponte; ideoque ficetis caprificus permittitur ad rationem venti ut flatus evolantes in
81 ficos ferat. inde repertum ut inlatae quoque aliunde et inter se colligatae inicerentur ficeto,[1] quod in macro solo et aquilonio non desiderant, quoniam sponte arescunt loci situ rimisque eadem quae culicum opera ea causa[2] perficit, nec ubi multus pulvis, quod evenit maxime frequenti via adposita; namque et pulveri vis siccandi sucumque lactis absorbendi. quae ratio pulvere et caprificatione hoc quoque praestat ne decidant, absumpto umore tenero et cum quadam
82 fragilitate ponderoso. ficis mollis omnibus tactus, maturis frumenta intus, sucus maturescentibus lactis, percoctis mellis. senescunt in arbore anusque destillant cummium lacrimas. siccat honos laudatas, servat in capsis, in[3] Ebuso insula praestantissimas amplissimasque, mox in Marrucinis; at ubi copia abundat, implentur orcae in Asia, cadi autem in[4] Ruspina Africae urbe, panisque simul et opsonii vicem siccatae implent, utpote cum Cato cibaria ruris

[1] *Warmington*: fico.
[2] *Rackham*: opere causa.
[3] in *add. Rackham.*
[4] in *add. edd.*

because of this in fig-orchards a goat-fig is allowed to grow on the windward side, so that when a wind blows the gnats may fly off and be carried to the fig-trees. Then a plan was discovered of also bringing branches of the wild fig from somewhere else and throwing them tied together in bundles on to the fig-orchard—a treatment which orchard figs do not require when planted in a thin soil with a northerly aspect, since they dry of their own accord owing to the situation of the place, and this cause by making them split open produces the same results as the action of the gnats; nor yet do they need screening where there is much dust, which occurs chiefly when a much frequented high road is adjacent, for dust also has the effect of drying them up and absorbing the milky juice. This method by means of the dust and the employment of the wild fig also serves the purpose of preventing the figs from falling off, by removing the juice which is soft and heavy, involving a certain liability to break. All figs are soft to the touch, and when ripe have grains inside them; also while in process of ripening they contain a milky juice, which when they are quite ripe is of the nature of honey. *Import of figs.* When left on the tree they grow old, and when quite aged they drip tears of gum. The figs that are highly approved are given the distinction of being dried and kept in boxes, the best and largest growing in the island of Iviza and the next best in the district of Chieti; but in places where there is a very large supply of them, they are packed for storage in large jars in Asia, but in casks in the city of Ruspina in Africa, and when dry they serve the purpose of bread and other viands at the same time, inasmuch as Cato, as if laying down a law as to the proper rations

operariis iusta ceu lege sanciens minui iubeat per fici maturitatem. cum recenti fico salis vice caseo
83 vesci nuper excogitatum est. ex hoc genere sunt, ut diximus, cottana et caricae quaeque conscendenti navem adversus Parthos omen fecere M. Crasso venales praedicantis voce, Cauneae. omnia haec in Albense rus e Syria intulit L. Vitellius, qui postea censor fuit, cum legatus in ea provincia esset, novissimis Tiberii Caesaris temporibus.

84 XXII. Malorum pirorumque generi adnumerentur iure mespila atque sorba. mespilis tria genera, anthedon, setania, tertium degenerat, anthedoni tamen similius, quod Gallicum vocant. setaniae maius pomum candidiusque, acini molliore ligno, ceteris minus pomum est, sed odore praestantius et quod diutius servetur. arbor ipsa de amplissimis; folia antequam decidant rubescunt; radices multae atque altae et ideo inextirpabiles. non fuit haec arbor in Italia Catonis aevo.

85 XXIII. Sorbis quadruplex differentia: aliis enim eorum rotunditas mali, aliis turbinatio piri, aliis ovata species ceu malorum aliquibus. haec obnoxia acori, odore et suavitate rotunda praecellunt, ceteris vini sapor; generosissima quibus circa pediculos tenera folia. quartum, genus torminale appellant,

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[a] Because they would be sure to eat a quantity of figs: Cato *R.R.* LVI.

[b] 'Cauneas' sounded like 'Caue ne eas,' 'Beware of going.' Cf. Cicero, *De div.* II. 84.

for agricultural labourers, prescribes that they are to be reduced in quantity during the time when the figs are ripe.[a] A plan has lately been devised to use a fresh fig instead of salt when eating cheese. To this class, as we have said, belong the Syrian and the Carian figs and the Caunean figs that, when Marcus Crassus was embarking to sail against the Parthians, gave him an omen by the voice of a man crying them for sale.[b] All these varieties of fruit were imported from Syria to his country place at Alba by Lucius Vitellius, afterwards censor, when he was lieutenant-governor in that province, in the latter part of the principate of the emperor Tiberius. xiii. 51.

Medlar.

XXII. Fruits that must be included in the class of apples and pears are the medlar and the service-berry. There are three sorts of medlar, the anthedon, the setania, and the third an inferior kind yet rather like the anthedon, which is called the Gallic medlar. The fruit of the setania is larger and of a paler colour, with a softer pip; the others have smaller fruit but with a superior scent and keeping longer. The tree itself is one of the most widely spreading; its leaves turn red before they fall off; it has a great many roots, which go deep into the ground and consequently it is impossible to grub them up. In Cato's time this tree did not exist in Italy.

Service-berry.

XXIII. There are four varieties of service-berry, some of them round like an apple, and others of conical shape like a pear, while others look like an egg, as do some kinds of apple. This last variety are liable to be sour, but the round ones excel in scent and sweetness, and the rest have a flavour of wine; the best varieties are those which have their stalks surrounded with tender leaves. The fourth kind is called the

remedio tantum probabile, adsiduum proventu minimumque pomo, arbore dissimile, foliis paene platani. non ferunt ante trimatum ex ullo genere. Cato et sorba condi sapa tradit.

86 XXIV. Ab his locum amplitudine vindicaverunt quae cessere auctoritate nuces iuglandes, quamquam et ipsae nuptialium Fescenninorum comites, multum pineis minores universitate eademque[1] portione ampliores nucleo. nec non et honori is naturae peculiaris gemino protectis operimento, pulvinati primum calycis, mox lignei putaminis. quae causa eas nuptiis fecit religiosas, tot modis fetu munito, quod est verisimilius quam quia cadendo tripudium
87 sonivium faciant. et has e Perside regibus translatas indicio sunt Graeca nomina: optimum quippe genus earum Persicum atque basilicon vocant, et haec fuere prima nomina. caryon a capitis gravedine propter odoris gravitatem convenit dictum. tinguntur cortice earum lanae et rufatur capillus primum prodeuntibus nuculis: id conpertum infectis tractatu
88 manibus. pinguescunt vetustate. sola differentia generum in putamine duro fragilive et tenui aut

[1] *Edd.*: eaedem.

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[a] At a wedding nuts were thrown by the bridegroom among the boys carrying the torches, as the bride approached; Virgil, *Ecl.* VIII. 31 'sparge, marite, nuces.' No doubt Pliny is right in explaining this as a fertility charm.

[b] *Sonivius*, 'noisy,' occurs only in this phrase in Cicero and here.

[c] *Caryon* from κάρα, 'head.'

colic apple and is only valued as a medicine; it is a steady bearer and has a very small fruit; the tree differs in appearance from the other kinds, and the leaves are almost the same as those of the plane. None of the sorbs bear before their third year. Cato records that even sorbs can be preserved in must. *R.R.* VII. 4.

XXIV. The walnut has won from the service-berry in point of size the place that it has yielded to it in popularity, although the walnut also accompanies the Fescennine songs sung at weddings. The whole nut is considerably smaller than a pine-cone, but the kernel is larger in the same proportion. Moreover the walnut has a distinction of structure that is peculiar to it, in that it is protected by a double covering, consisting first of a cushion-shaped cup and then of a woody shell. This is the reason why walnuts have become emblems consecrated to weddings,[a] because their progeny is protected in so many ways—a more likely explanation of the custom than that it is due to the rattling rebound[b] which it makes when it falls on the floor. The Greek names for the walnut prove that it also was sent us from Persia by the kings, the best kind of walnut being called in Greek the 'Persian' and the 'royal,' and these were their original names. It is generally agreed that the caryon walnut gets its name from the headache[c] that it causes because of its oppressive scent. The shell of the walnut is used for dyeing wool, and the young nuts while just forming supply a red hair-dye—this was discovered from their staining the hands when handled. Age makes them oily. The only difference between the various kinds of walnuts consists in the hardness or brittleness of the shell and in its *Walnut.*

crasso, loculoso aut simplici. solum hoc pomum natura conpactili operimento clausit: namque sunt bifidae putaminum carinae nucleorumque alia quadripertita distinctio lignea intercursante membrana. ceteris quidquid est solidum est ut in abellanis, et ipso nucum genere, quas antea Abellinas patriae nomine appellabant: in Asiam Graeciamque e Ponto venere eae ideoque et[1] Ponticae nuces vo-
89 cantur. has quoque mollis protegit barba, sed putamini nucleisque solida rotunditas inest. hae et torrentur. umbilicus illis intus in ventre medio. tertia in his[2] natura amygdalis tenuiore sed simili iuglandium summo operimento, item secundo putaminis; nucleus dissimilis latitudine[3] et acriore
90 callo. haec arbor an fuerit in Italia Catonis aetate dubitatur, quoniam Graecas nominat, quas quidam et in iuglandium genere servant. adicit praeterea abellanas et calvas,[4] Praenestinas, quas maxime laudat et conditas ollis in terra servari virides tradit. nunc Thasiae et Albenses celebrantur et Tarentinarum duo genera, fragili putamine ac duro, quae sunt amplissimae ac minime rotundae: praeterea mollu-
91 scae putamen rumpentes: sunt qui honore[5] nomen interpretentur et Iovis glandem esse dicant. nuper

[1] *Mayhoff*: venere et ideo quod.
[2] *V.l.* tertiam his: tertia nucis *Mueller.*
[3] latitudine ⟨minore⟩? *Rackham.*
[4] *Sillig coll. Catone*: galbas.
[5] honore? *Mayhoff*: honori.

[a] Abella in Campania.
[b] *I.e.* unlike the walnut, its shell does not split into halves and the nut does not lie in four quarters.
[c] An almond has breadth and length; the walnut is more uniform.
[d] *R.R.* VIII. 2, CXXXIII, 3.
[e] *Iuglans* = *Iouis glans.*

being thin or thick and full of recesses or uniform. It is the only fruit which nature has enclosed in a covering made of pieces fitted together; for the shell is divided into two boat-shaped pieces, and the kernel is further separated into four sections with a woody membrane running between them. In all the other *Hazel.* kinds of nut the whole is in one solid piece, as for instance in the hazel, itself also a sort of nut, the previous form of its name having been Abellina, after the name of its place of origin;[a] but it came into Asia and Greece from Pontus and is consequently also called the Pontic nut. This nut also is protected by a soft beard, but the shell and the kernel are formed of one solid round piece.[b] It also is roasted. The kernel has a navel in its centre. A third variety of the nut class is the almond, which *Almond.* has an outer integument like that of the walnut but thinner, and also a second covering consisting of a shell; but the kernel is unlike a walnut's in its breadth[c] and its hard part is more bitter. It is doubtful whether this tree existed in Italy in the time of Cato, as he calls[d] almonds 'Greek nuts,' a name which some people also retain in the class of walnuts. Beside these Cato adds a smooth, hard kind of hazel-nut, the Palestrina nut, which he praises very highly and says can be kept fresh and green by being potted and buried in the ground. At the present day the almonds of Thasos and Alba are famous, and two kinds grown at Taranto, one with a brittle shell and the other with a hard shell, which are very large in size and very little rounded in shape; also famous is the 'soft nut,' which breaks through its shell. Some interpret the word for walnut as honorific and say it means 'Jove's acorn.'[e] I

consularem virum audivi biferas et iuglandes nuces habere se profitentem. de pistaciis, et ipso nucum genere, in suo loco retulimus. et haec autem idem Vitellius in Italiam primus intulit eodem tempore, simulque in Hispaniam Flaccus Pompeius eques Romanus qui cum eo militabat.

92 XXV. Nuces vocamus et castaneas, quamquam accommodatiores glandium generi. armatum his echinato calyce vallum, quod inchoatum glandibus, mirumque vilissima esse quae tanta occultaverit cura naturae. trini quibusdam partus ex uno calyce; cortexque lentus, proxima vero corpori membrana et in his et in nucibus saporem, ni detrahatur, infestat. torrere has in cibis gratius, modo molantur,[1] et praestant ieiunio feminarum quandam imaginem
93 panis. Sardibus hae provenere primum: ideo apud Graecos Sardianos balanos appellant, nam Dios balanu nomen[2] postea inposuere excellentioribus satu factis. nunc plura earum genera. Tarentinae faciles nec operosae cibo, planae figura. rotundior quae balanitis vocatur, purgabilis maxime et sponte pro-
94 siliens pura. plana est et Salariana, Tarentina minus tractabilis. laudatior Corelliana et ex ea facta quo

[1] *Mayhoff*: gratius modulatur *aut alia.*
[2] *Mayhoff*: Dios balanum.

lately heard a man of consular rank declare that he owned some walnut trees that actually bore two crops a year. We have already spoken in the proper place of the pistachio, which is also a sort of nut. This also was likewise first brought into Italy by Vitellius at the same time, and it was simultaneously introduced into Spain by Pompeius Flaccus, Knight of Rome, who was serving with Vitellius.

Pistachio. XIII. 51. § 83.

XXV. We give the name of nut to the chestnut also, although it seems to fit better into the acorn class. The chestnut has its armed rampart in its bristling shell, which in the acorn is only partly developed, and it is surprising that what nature has taken such pains to conceal should be the least valuable of things. Some chestnuts produce three nuts from one shell; and the skin is tough, but next to the body of the nut there is a membrane which both in the chestnut and the walnut spoils the taste if it is not peeled off. It is more agreeable as a food when roasted, provided it is ground up, and it supplies a sort of imitation bread for women when they are keeping a fast. They came first from Sardis, and consequently they are called nuts of Sardis among the Greeks, for the name of Zeus's nut was given them later, after they had been improved by cultivation. There are now several varieties of them. The Taranto chestnut is light and digestible to eat; it has a flat shape. The chestnut called the acorn-chestnut is rounder; it is very easy to peel, and jumps out of the shell quite clean of its own accord. The Salarian chestnut also has a flat shape, but that of Taranto is less easy to handle. The Corellian is more highly spoken of, and so is the variety produced from it by the method which we shall speak of in XVII. 122.

Chestnut, provenance and varieties.

dicemus in insitis modo Etereiana, quam rubens cortex praefert triangulis et popularibus nigris quae coctivae vocantur. patria laudatissimis Tarentum et in Campania Neapolis; ceterae suum pabulo gignuntur, scrupulosa corticis intra nucleos quoque ruminatione.

95 XXVI. Haut procul abesse videantur et praedulces siliquae, nisi quod in his ipse manditur cortex. digitorum omnis longitudo illis, et interim falcata, pollicari latitudine. glandes inter poma numerari non possunt, quamobrem in sua natura dicentur.

96 XXVII. Reliqua carnosi sunt generis, eaque bacis atque carnibus distant. alia acinis caro, alia moris, alia unedonibus; et alia acinis inter cutem sucumque,
97 alia myxis, alia bacis ut olivis. moris sucus in carne vinosus, trini colores, candidus primo, mox rubens, maturis niger. in novissimis florent, inter prima maturescunt. tingunt manus suco matura, eluunt acerba. minimum in hac arbore ingenia profecerunt: nec nominibus nec insitione[1] nec alio modo quam pomi magnitudine differunt mora Ostiensia et Tusculana Romanae.[2] nascuntur et in rubis multum differente callo.

[1] insitione? *Mayhoff* (insitu *Dalec.*): insitis.
[2] *Rackham*: Romane *aut* Romae.

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[a] *I.e.* the grape, elder-berry, ivy-berry, etc.
[b] The blackberry.

dealing with grafting, the Etereian, which its red skin renders more popular than the three-cornered chestnut and the common black ones called cooking chestnuts. The most highly commended chestnuts come from Taranto, and in Campania from Naples; all the other kinds are grown for pig-food; the pigs carefully chew up the shells as well, together with the kernels.

XXVI. Also the extremely sweet carob may be thought to be not far remote from the chestnut, except that in the case of the carob the husk itself is eaten. It is not longer than a man's finger, and occasionally curved like a sickle, and it has the thickness of a man's thumb. Acorns cannot be counted among fruits, and consequently they will be dealt with among trees of their own kind. *Carob.*

XXVII. The remaining fruits belong to the fleshy class, and they differ in their shape and in their flesh. Berries [a] have one kind of flesh, the mulberry another, the strawberry-tree another; and the grape, etc., have a substance between skin and juice different from that of the myxa plum and from that of berries such as the olive. The flesh of the mulberry contains a vinous juice, and the fruit has three successive colours, first white, then red, and when ripe black. The mulberry is one of the latest trees to blossom, but among the first to ripen. The juice of ripe mulberries stains the hand, but the stain can be washed out with the juice of unripe ones. In the case of this tree the devices of the growers have made the least improvement of any, and the mulberry of Ostia and that of Tivoli do not differ from that of Rome by named varieties or by grafting or in any other way except in the size of the fruit. A similar but much firmer berry [b] also grows on brambles. *Soft fruits.* *Mulberry.*

98 XXVIII. Aliud corpus est terrestribus fragis, aliud congeneri eorum unedoni, quod solum pomum simul e[1] frutice terraque gignitur. arbor ipsa fruticosa; fructus anno maturescit, pariterque floret subnascens et prior coquitur. mas sit an femina sterilis inter
99 auctores non constat. pomum inhonorum, ut cui nomen ex argumento sit unum tantum edendi. duobus tamen his[2] nominibus appellant Graeci, comaron et memaecylon, quo apparet totidem esse genera; et apud nos alio nomine arbutus vocatur. Iuba auctor est quinquagenum cubitorum altitudine in Arabia esse eas.

100 XXIX. Acinorum quoque magna est differentia, primum inter uvas ipsas callo, teneritate, crassitudine, interiore ligno aliis parvo et aliis etiam gemino, qui minime feraces musti. plurimum vero differunt hederae sabucique acini, et figura etiam Punici, angulosi quippe soli, nec cutis ulla singulis praeter communem quae est candida. totisque sucus et caro est, his praecipue quibus parvolum inest ligni.

101 Magna et bacis differentia: aliae namque sunt olivis, lauris et alio modo loto, cornis, alio myrtis,

[1] simul e *Mayhoff*: simile.
[2] *Mayhoff*: hic *aut* hoc.

[a] *Unedo* from *unum edo*.

XXVIII. The flesh of the ground strawberry is different from that of the strawberry-tree which is related to it, the strawberry being the only fruit that grows at the same time on a bush and on the ground. The tree itself is a sort of shrub; the fruit takes a year to mature, and the following crop flowers side by side with the earlier crop when it is ripening. Authorities disagree as to whether it is the male plant or the female that is unproductive. The fruit is held in no esteem, the reason for its name being that a person will eat only one! [a] Nevertheless the Greeks call it by the two names of comaron and memaecylon, which shows that there are two varieties of the plant; and with ourselves it has another name, the arbutus. Juba states that in Arabia the strawberry-tree grows to a height of 75 feet. *Strawberry.* *Arbutus fruit.*

XXIX. There is also a great difference among the acinus class—to begin with, between grapes themselves, which vary in respect of firmness, thinness or thickness of skin and the stone inside, which in some is specially small and in others actually double, the latter producing extremely little juice. Again, the berries of the ivy and the elder are very widely different, and the pomegranate differs greatly in shape also, being the only fruit that has corners; and there is no membrane for each separate grain, but only one wrapping for them all in common, which is white in colour. And these fruits consist entirely of juice and flesh, particularly the ones which contain only a small amount of woody substance. *Varieties of berry, soft and hard.*

There is also a great variety among the berries of the baca kind, those of the olive and the laurel being different, and that of the lotus differing in structure from that of the cornel and that of the myrtle from

lentisco; aquifolio enim ac spinae sine suco; medioque etiamnum genere inter bacas acinosque cerasis: pomum his primo candidum et fere omnibus bacis. mox aliis virescit, ut olivae, lauri, rubet vero moris, cerasis, cornis, dein nigrescit moris, cerasis, olivis.

102 XXX. Cerasia[1] ante victoriam Mithridaticam L. Luculli non fuere in Italia, ad urbis annum DCLXXX. is primum invexit[2] e Ponto, annisque CXX trans oceanum in Britanniam usque pervenere; eadem [ut diximus],[3] in Aegypto nulla cura potuere gigni. cerasorum Aproniana maxime rubent, nigerrima
103 sunt Lutatia, Caeciliana vero et rotunda. Iunianis gratus sapor, sed paene tantum sub arbore sua, adeo teneris ut gestatum non tolerent. principatus duracinis quae Pliniana Campania appellat, in Belgica vero Lusitanis, in ripis etiam Rheni. tertius his colos e nigro ac rubenti viridique, similis maturescentibus
104 semper. minus quinquennium est quod prodiere quae vocant laurea, non ingratae amaritudinis, insitae in lauru. sunt et Macedonica, parvae arboris raroque tria cubita excedentis, et minore etiamnum frutice chamaecerasi. inter prima hoc e pomis

[1] Cerasia? *Mayhoff*: Cerasi.
[2] *Mayhoff*: vexit.
[3] *Secl. Ian.*

[a] *Duracina*, 'hard-berry.'

that of the lentisk; indeed the berries of the holly and the may contain no juice; and moreover the cherry forms a class intermediate between the baca kind of berries and the acinus kind: its fruit is at first white, as is that of almost all the bacae. At a later stage with some the berry turns green, *e.g.* the olive and the laurel; but in the case of the mulberry, the cherry and the cornel it changes to red, and then with the mulberry, cherry and olive it turns black.

XXX. Before the victory of Lucius Lucullus in the war against Mithridates, that is down to 74 B.C., there were no cherry-trees in Italy. Lucullus first imported them from Pontus, and in 120 years they have crossed the ocean and got as far as Britain; but all the same no attention has succeeded in getting them to grow in Egypt. Of cherries the Apronian are the reddest, and the Lutatian the blackest, while the Caecilian kind are perfectly round. The Junian cherry has an agreeable flavour but practically only if eaten under the tree on which it grows, as it is so delicate that it does not stand carriage. The highest rank, however, belongs to the bigaroon [a] cherry called by the Campanians the Plinian cherry, but in Belgium to the Lusitanian, and so also on the banks of the Rhine. This cherry has a third kind of colour, a blend of black, bright red and green, which looks as if the fruit were always not quite ripe. It is less than five years ago that what is called the laurel-cherry was introduced, which has a not disagreeable bitter flavour, and is produced by grafting a cherry on a bay-tree. There are also Macedonian cherries, grown on a tree of small size and rarely exceeding four and half feet in height, and ground-cherries, with a still smaller bush. The cherry is one of the earliest *Cherry.*

colono gratiam annuam refert. septentrione frigi-
disque gaudet; siccatur etiam sole conditurque ut
105 oliva cadis. XXXI. Quae cura et cornis atque etiam
lentisco adhibetur. ne quid non hominis ventri
natum esse videatur, miscentur sapores et alio alius
placere cogitur; miscentur vero et terrae caelique
tractus: in alio cibi genere India advocatur, in alio
Aegyptus, Creta, Cyrene singulaeque terrae. nec
cessat in veneficiis vita, dummodo omnia devoret.
planius hoc fiet in herbarum natura.

106 XXXII. Interim quae sunt communia [et][1] pomis
omnibusque sucis saporum genera x[2] reperiuntur:
dulcis, suavis, pinguis, amarus, austerus, acer, acutus,
acerbus, acidus, salsus. praeter haec tria sunt
genera mirabili maxime natura: unum in quo plures
107 pariter sentiuntur sapores, ut in[3] vinis—namque
in iis et austerus et acutus et dulcis et suavis, omnes
alieni; alterum est genus in quo sit et alienus
quidem sed et suus quidam ac peculiaris, ut in lacte,
siquidem inest ei quod tamen iure dici dulce et
pingue et suave non possit, optinente lenitate quae
108 ipsa succedit in saporis vicem; nullus hic aquis nec
sucus, ut tamen eo ipso fiat aliquis ac suum genus
faciat: sentiri quidem aquae saporem ullum sucumve

[1] *Secl.? Mayhoff.* [2] x? *Mayhoff*: XIII.
[3] ut in? *Mayhoff*: ut.

fruits to repay its yearly gratitude to the farmer. It likes a north aspect and cold conditions; moreover it can be dried in the sun and stored in casks like olives. XXXI. The same amount of care is also bestowed on the cornel, and even on the lentisk. So that nothing may not appear to have come into existence for the sake of man's appetite, flavours are blended and different ones are forced to gratify different persons; indeed even the regions of the earth and of the sky are blended: in one kind of food the aid of India is invoked, in another that of Egypt, Crete, Cyrene and every land in turn. Nor does our regimen stick at poisons, if only it may devour everything. This will become clearer when we come to the nature of herbaceous plants.

Cornel and lentisk.

XXXII. In the meantime we find that there are ten kinds of flavours that belong in common to the fruits and to all their juices; sweet, luscious, unctuous, bitter, rough, acrid, sharp, harsh, acid and salt. Beside these there are three other flavours of a particularly remarkable nature: (1) one in which several tastes are discerned simultaneously, as in wines—for they contain both a rough and a sharp and a sweet and a luscious taste, all of them different from each other; (2) another kind is that which contains both the flavour of something else and one that is its own and peculiar to itself, for instance milk—inasmuch as milk contains a something which nevertheless cannot rightly be called sweet or unctuous or luscious, being possessed by a smoothness which of itself takes the place of a flavour; (3) water has no flavour at all and no flavouring constituent, yet still this very fact gives it some taste and makes it form a class of its own: at all events for water to have any per-

Varieties of flavour of fruit (and of other objects).

vitium est. magnum his omnibus in odore momentum et magna cognatio, qui et ipse nullus est aquis aut, si sentitur omnino, vitium est. mirum tria naturae praecipua elementa sine sapore esse, sine odore, sine suco, aquas aera ignes.

109 XXXIII. Ergo sucorum vinosi piro, moro, myrto, minimeque, quod miremur, uvis; pingues olivae, lauro, nuci iuglandi, amygdalis, dulces uvis, ficis, palmis, aquosi prunis. magna differentia et in colore suci: sanguineus moris, cerasis, cornis, uvis nigris, idem albis candidus, lacteus in capite ficis, in corpore non item, spumeus malis, nullus Persicis, cum praesertim duracina suco abundent, sed quis eius ullum dixerit colorem?

110 Sua et in odore miracula. malis acutus, Persicis dilutus, dulcibus nullus; nam et vinum tale sine odore, tenue odoratius, multoque celerius talia ad usum veniunt quam pinguia. quae odorata non eadem [1] gustu tenera, quia non sunt pariter odor et sapor; quamobrem citreis odor acerrimus, sapor asperrimus, quadamtenus et cotoneis; nullusque odor ficis.

[1] eadem in *codd.*: *an* eadem *delendum*? *Mayhoff.*

ceptible taste or flavour is a defect. In all these flavours smell is of great importance and a great factor of affinity; in the case of water even smell is entirely absent, or if perceptible at all is a defect. It is a remarkable fact that the three chief natural elements, water, air and fire, have neither taste, smell, nor any flavour whatever.

XXXIII. Among juices, then, those with a vinous flavour are the juices of the pear, the mulberry and the myrtle-berry, and surprising as it may seem, the juice of the grape least of all. The juice of the olive, laurel, walnut and almond is unctuous, that of grapes, figs and dates is sweet, and that of plums watery. There is also a great difference in the colour of juice: that of the mulberry, the cherry, the cornel and the black grape is blood-red; the juice of white grapes is of a light colour; fig juice is milky white in the part near the stalk but not in the body of the fruit; apple juice is the colour of foam; peach juice has no colour at all, in spite of the fact that the hard peach has a large quantity of juice, but no one would say that this has any colour. *Colour and scent of fruit-juices.*

Smell also contains its own marvels. Apples have a pungent scent, peaches a weak one, and sweet fruits none at all; for even sweet wine has no smell, although thin wine has more aroma, and wines of that class become fit for use much sooner than those with more body. Fruits with a scent are not likewise agreeable to the palate, as scent and flavour do not go together—so that citrons have a very penetrating smell and a very rough taste, and in some degree that is the case with quinces also; and figs have no smell.

111 XXXIV. Et hactenus sint species ac genera pomorum: naturas artius colligi par est. alia siliquis distinguntur,[1] ipsis dulcibus semenque conplexis amarum, cum in pluribus semina placeant, in siliqua damnentur; alia bacis, quarum intus lignum et extra caro, ut olivis, cerasis. aliquorum intus bacae, foris lignum,
112 ut iis quae in Aegypto diximus gigni. quae bacis natura eadem et pomis: aliorum intus corpus et foris lignum, ut nucum; aliis foris corpus, intus lignum, ut Persicis et prunis, vitiumque cinctum fructu, cum fructus alibi muniatur vitio. putamine clauduntur nuces, corio castaneae; detrahitur hoc iis, at in mespilis manditur. crusta teguntur glandes, cute uvae, corio et membrana Punica. carne et suco
113 mora constant, cute et suco cerasi. quaedam statim a ligno recedunt, ut nuces et palmae; quaedam adhaerent, ut olivae laurusque; quorundam generi utraque est natura, ut in Persicis: etenim duracinis adhaeret corpus et ligno avelli non quit, cum in ceteris facile separetur. quibusdam nec intus nec extra
114 lignum, ut in palmarum genere. aliquorum lignum

[1] *Mayhoff*: tinguntur *aut* gignuntur.

XXXIV. And so much for the various classes and kinds of fruits. Their structures call for closer examination. Some fruits are characterized by their pods, which are themselves sweet and which enclose a seed that is bitter, since whereas in fairly many plants the seeds are agreeable, seeds contained in a pod are not approved of. Others are characterized by berries which have a hard kernel inside and flesh outside, for instance olives and cherries. Some have the berries inside and a hard shell outside, as is the case with the fruit we spoke of that grows in Egypt. Fruits of the apple kind have the same structure as the berries: some have flesh inside and a hard case outside, as in the case of nuts; while others have flesh outside and a hard stone inside, as is the case with peaches and plums, which thus have the refuse part wrapped round with the fruit, whereas in other cases the fruit is shielded by the refuse part. Nuts are enclosed in a shell, chestnuts in a skin; with chestnuts the skin is removed, but in the case of medlars it is eaten. Acorns are covered with a hard shell, grapes with a skin, pomegranates with an outer skin and an inner skin. Mulberries consist of flesh and juice, cherries of skin and juice. Some fruits separate from their woody part at once, for instance nuts and dates, but some adhere to it, for instance olives and laurel-berries; and one group has both properties, for example peaches, inasmuch as in the hard peach or nectarine the flesh adheres and cannot be torn away from the stone, whereas in all the other sorts it is easily separated. Some fruits have no stone inside and no shell outside, for instance the date class. Of some kinds the hard part itself is

Various structures of fruits, and various parts edible.

XIII. 60.

ipsum in usu et pomi vice, ut cuci[1] quam in Aegypto diximus. quorundam extra geminantur vitia, ut in castaneis et amygdalis nucibusque iuglandibus. quorundam natura trigemina: corpus est, dein lignum rursusque semen in ligno, ut Persicis. quaedam inter se densa, ut uvae, sorba, quae ramos circumdata ex omni parte uvarum modo degravant; alia rara, ut
115 in Persicis. quaedam alvo continentur, ut granata; dependent alia pediculis, ut pira, alia racemis, ut uvae, palmae, alia et pediculis et racemis, ut hederae, sabuci. alia ramo adhaerent, ut in lauru, quaedam utroque modo, ut olivae, nam et breves pediculi et longi. quaedam vasculis constant, ut Punica et
116 mespila lotosque in Aegypto et Euphrate. iam vero diversa gratia et commendatio. carne palmae placent, crusta Thebaicae, suco uvae et caryotae, callo pira ac mala, corpore mora, cartilagine nuclei, grano quaedam in Aegypto, cute Caricae: detrahitur haec ficis virentibus ut putamen, eisdemque[2] in siccis
117 maxime placet. in papyris et ferulis spinaque alba caulis ipse pomum est, sicut[3] et ficulni caules, in fruticoso genere cum caule capparis; in siliquis vero quod manditur quid nisi lignum est? non omittenda seminis earum proprietate: nam neque corpus nec

[1] *Detlefsen*: ut genera mydis (ut genera e nucleis quaedam in *Mayhoff*).
[2] eademque *Mayhoff*.
[3] *Mayhoff*: sunt.

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[a] Cf. p. 134, note *b*.

used and serves as fruit, for instance the cuci[a] which we spoke of as growing in Egypt. Some fruits have XIII. 62. a double refuse-covering, as in the case of chestnuts and almonds and walnuts. Some have a threefold structure—there is flesh and then shell and then again a seed inside the shell—for instance peaches. Some fruits grow in clusters, for instance grapes and sorbs, the latter clinging all round the branches and weighing them down, like grapes; but others hang separately, as in the case of the peach. Some fruits are contained in a matrix, for instance pomegranates; some hang down from a stalk, for instance pears, others hang in bunches, for instance grapes and dates, and others hang from a stalk and form bunches as well, for instance ivy-berries and elder-berries. Others are attached to a branch, like the berry on the laurel, while certain kinds hang in both ways, for instance olives, for they have both short stalks and long ones. Some consist of capsules, for instance the pomegranate, the medlar and the lotus in Egypt and on the Euphrates. Then again fruits have a variety of attractions to recommend them. Dates please us by their flesh, but the dates of the Thebaid by their hard skin; grapes and nut-dates by their juice, pears and apples by their firm flesh, mulberries by their substance, nuts by their solid interior, certain fruits in Egypt by their pips, Carian figs by their skin: this is removed from green figs as refuse, but in dried figs it is very agreeable. In the case of the papyrus, the fennel-giant and the white thorn the stalk itself is the fruit, as are the stalks of the fig-tree, and in the shrub class the caper with its stalk; but in the carob the only part that is eaten is the wood—while its seed has a property that must

lignum nec cartilago dici potest, neque aliud nomen inveniat.

118 XXXV. Sucorum natura praecipuam admirationem in myrto habet, quando ex una omnium olei vinique bina genera fiunt, item myrtidanum, ut diximus. et alius usus bacae fuit apud antiquos, antequam piper reperiretur, illam optinentis[1] vicem, in quodam etiam genere opsonii nomine inde tracto, quod etiam nunc myrtatum vocatur. eademque origine aprorum sapor commendatur, plerumque ad intinctus additis myrtis.

119 XXXVI. Arbor ipsa in Europae citeriore caelo, quod a Cerauniis montibus incipit, primum Cerceis in Elpenoris tumulo visa traditur, Graecumque ei nomen remanet, quo peregrinam esse apparet. fuit ubi nunc Roma est iam cum conderetur, quippe ita traditur, myrtea verbena Romanos Sabinosque, cum propter raptas virgines dimicare voluissent, depositis armis purgatos in eo loco qui nunc signa Veneris Cluacinae habet: cluere enim antiqui purgare
120 dicebant. et in ea quoque arbore suffimenti genus habetur, ideo tum electa quoniam coniunctioni et huic arbori Venus praeest, haud scio an prima etiam omnium in locis publicis Romae sata, fatidico quidem[2] et memorabili augurio. inter antiquissima namque

[1] obtinentis? *Mayhoff*: obtinens.
[2] quodam? *Rackham*.

not be omitted: it cannot be called either flesh or wood or cartilage, and it would not be given any other name.

XXXV. The nature of the juices produced is particularly remarkable in the case of the myrtle, because it is the only one among all the trees that gives two kinds of oil and of wine, beside the drink called myrtidanum, as we said. In former times another use was also made of the myrtle-berry, which held the place of pepper before pepper was discovered; in fact, in the case of one kind of savoury dish the name is derived from this, it being to this day called myrtle sausage. Also the flavour of wild boar is improved from the same source, as the pickle usually has myrtle-berries added to it.

Myrtle juice.

XIV. 104.

XXXVI. The actual tree is recorded to have been seen for the first time on the hither side of Europe, beginning from the Ceraunian Mountains, on the grave of Elpenor at Circello, and it still keeps its Greek name, showing it to be an exotic. At the time of the foundation of Rome myrtles grew on the present site of the city, as tradition says that the Romans and Sabines, after having wanted to fight a battle because of the carrying off of the maidens, laid down their arms and purified themselves with sprigs of myrtle, at the place now occupied by the statues of Venus Cluacina, *cluere* being the old word meaning 'to cleanse.' And a kind of incense for fumigation is also contained in this tree, which was selected for the purpose on the occasion referred to because Venus the guardian spirit of the tree also presides over unions, and I rather think that it was actually the first of all trees to be planted in public places at Rome, fraught indeed with a prophetic and remarkable augury.

History of the myrtle at Rome.

delubra habetur Quirini, hoc est ipsius Romuli. in eo sacrae fuere myrti duae ante aedem ipsam per longum tempus, altera patricia appellata, altera
121 plebeia. patricia multis annis praevaluit exuberans ac laeta; quamdiu senatus quoque floruit, illa ingens, plebeia retorrida ac squalida. quae postquam evaluit flavescente patricia, a Marsico bello languida auctoritas patrum facta est, ac paulatim in sterilitatem emarcuit maiestas. quin et ara vetus fuit Veneri Myrteae, quam nunc Murciam vocant.

122 XXXVII. Cato tria genera myrti prodidit, nigram, candidam, coniugulam, fortassis a coniugiis, ex illo Cluacinae genere; nunc et alia distinctio sativae aut silvestris et in utraque latifoliae; in silvestri propria oxymyrsine. sativarum genera topiarii faciunt Tarentinam folio minuto, nostratem patulo, hexasticham densissimo, senis foliorum versibus. haec non est in usu, ramosa atque non alta.[1] coniugulam existimo
123 nunc nostratem dici. myrtus odoratissima Aegypto.

[1] atque n̄ (= non) alta *Mayhoff*: utque in alia (utique in Italia *Sillig*).

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[a] *De Re Rustica*, VIII. 2, CXXXIII. 2.

For the shrine of Quirinus, that is of Romulus himself, is held to be one of the most ancient temples. In it there were two sacred myrtles, which for a long time grew in front of the actual temple, and one of them was called the patricians' myrtle and the other the common people's. For many years the patricians' tree was the more flourishing of the two, and was full of vigour and vitality; as long as the senate flourished this was a great tree, while the common people's myrtle was shrivelled and withered. But after the latter had grown strong while the patrician myrtle began to turn yellow, from the Marsian war onward 91-88 B.C. the authority of the Fathers became weak, and by slow degrees its grandeur withered away into barrenness. Moreover there was also an old altar belonging to Venus Myrtea, whose modern name is Murcia.

XXXVII. Cato mentioned [a] three kinds of myrtle, *Varieties of myrtle.* the black, the white and the 'union myrtle'—perhaps named after marriage unions—descended from the stock of the Cluacina myrtle mentioned above; § 119. but at the present day there is also another classification, which distinguishes the cultivated and the wild myrtle, and in each of these also a wide-leaved variety, while the variety called oxymyrsine occurs only in the wild kind. Varieties of the cultivated myrtle produced by landscape-gardeners are the Taranto myrtle with a very small leaf, the Roman myrtle with a broad leaf, and the 'six-row' myrtle with very thick foliage, the leaves growing in rows of six. The last is not much grown, being bushy and not lofty. I believe that the union-myrtle is now called the Roman myrtle. The myrtle with the most powerful scent belongs to Egypt. Cato taught

Cato docuit vinum fieri e nigra siccata usque in ariditatem in umbra atque ita musto indita: si non siccentur bacae, oleum gigni. postea conpertum et ex alba vinum fieri album, duobus sextariis myrti tusae in vini tribus heminis maceratae expressaeque. folia et per se siccantur in farinam ad ulcerum remedia in corpore humano leniter mordaci pulvere ac refri-
124 gerandis sudoribus. quinimmo oleo quoque, mirum dictu, inest quidam vini sapor simulque pinguis liquor, praecipua vi ad corrigenda vina saccis ante perfusis: retinet quippe faecem, nec praeter purum liquorem transire patitur datque se comitem praecipua commendatione liquato. virgae quoque eius, gestatae modo viatori, prosunt in longo itinere pediti. quin et virgei anuli expertes ferri inguinum tumori medentur.

125 XXXVIII. Bellicis quoque se rebus inseruit, triumphansque de Sabinis P. Postumius Tubertus in consulatu, qui primus omnium ovans ingressus urbem est, quoniam rem leniter sine cruore gesserat myrto Veneris victricis coronatus incessit optabilemque arborem etiam hostibus fecit. haec postea ovantium fuit

how to make wine from the black myrtle, by drying it in the shade until no moisture remained and then putting it in must; he says that if the berries are not thoroughly dried, oil is produced. Afterwards a way was also discovered of making a white wine from the pale variety, by steeping a quart of pounded myrtle in a pint and a half of wine and then pressing out the liquor. The leaves are also dried by themselves till they go to a powder, which is used as a cure for sores on the human body, the powder being slightly corrosive and serving to cool off the perspiration. Moreover, the oil also curiously enough contains a certain flavour of wine, and at the same time has a greasy fluidity which makes it specially efficacious for improving wines if it is poured over the wine-strainers before they are used; this is because the oil retains the lees and only allows the pure liquor to pass through, and unites with the wine after it has been strained, greatly improving it. Sprigs of myrtle also merely by being carried by a traveller are beneficial when making a long journey on foot. Moreover, rings made of myrtle twigs which have never been touched by iron are a cure for swellings in the groin.

XXXVIII. The myrtle has also claimed a part in matters of warfare, and Publius Postumius Tubertus, the first of all men who ever entered the city with an ovation, during his consulship celebrated a triumph over the Sabines, and because he had won the campaign easily, without bloodshed, he made his entry wearing a wreath made of the myrtle of Venus Victrix, and so made that tree a coveted object even for our enemies. Subsequently a myrtle wreath was regularly worn by generals celebrating an ovation,

Myrtle-wreaths in ovations.

503 B.C.

corona excepto M. Crasso qui de fugitivis et Spartaco
126 laurea coronatus incessit. Masurius auctor est curru quoque triumphantes myrtea corona usos. L. Piso tradit Papirium Masonem, qui primus in monte Albano triumphavit de Corsis, myrto coronatum ludos Circenses spectare solitum: avus maternus Africani sequentis hic fuit. M. Valerius duabus coronis utebatur, laurea et myrtea, quia[1] hoc voverat.

127 XXXIX. Laurus triumphis proprie dicatur, vel gratissima domibus, ianitrix Caesarum pontificumque; sola et domos exornat et ante limina excubat. duo eius genera tradidit Cato, Delphicam et Cypriam. Pompeius Lenaeus adiecit quam mustacem appellavit, quoniam mustaceis subiceretur: hanc esse folio maximo flaccidoque et albicante, Delphicam aequali colore viridiorem, maximis bacis atque e viridi rubentibus; hac[2] victores Delphis coronari ut trium-
128 phantes Romae. Cypriam esse folio brevi, nigro, per margines imbricato crispam. postea accessere genera[3]: tinus—hanc silvestrem laurum aliqui
129 intellegunt, nonnulli sui generis arborem: differt color, est enim caerula baca. accessit et regia, quae

[1] quia? *Mayhoff*: qui et.
[2] *Edd.*: ac.
[3] genera ⟨plura⟩? *Mayhoff*.

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[a] *I.e.* when they were baked; Cato *R.R.* CXXI, 2, says that these cakes were made of fine wheat, must, anise, cummin, lard and cheese, and scraped laurel sprigs.
[b] Our *Laurus tinus*.

with the exception of Marcus Crassus, who when celebrating his victory won from the runaway slaves and Spartacus, made his entry wearing a wreath of laurels. Masurius informs us that generals going in triumph in a chariot also used to wear a myrtle wreath. Lucius Piso records that Papirius Maso, the first general who held a triumph on the Alban Mount, in celebration of his victory over the Corsicans, was in the habit of wearing a wreath of myrtle when watching the games in the circus: he was the maternal grandfather of the second Africanus. Marcus Valerius wore two wreaths, one of laurel and one of myrtle, having made a vow to do so. 71 B.C.

The bay-tree for wreaths and in gardens; its varieties.

XXXIX. The laurel is especially assigned to triumphs, but it is extremely decorative for dwelling-houses, and guards the portals of the emperors and the high priests; there it hangs alone, adorning the mansions and keeping sentry-guard before the thresholds. Cato has recorded two species of laurel, the Delphic CXXXIII. 2.
and the Cyprian. Pompeius Lenaeus added one which he called mustax, because it was placed underneath mustacean cakes:[a] he said that this has a very large, pendulous leaf of a whitish colour, and that the Delphic laurel is a uniform greener colour, and has very large berries of a reddish green; and that this laurel is used to make wreaths for the winners at Delphi, as it is for generals going in triumph at Rome. He states that the Cyprus laurel is crinkly, with a short black leaf that curves up along the edges. Since his time varieties have been added: the tine tree[b]—this some take to be the wild laurel, but there are people who think that it is a separate kind of tree: indeed there is a difference of colour, the berry being bright blue. Another addition is

coepit Augusta appellari, amplissima et arbore et folio, bacis gustatu quoque non asperis. aliqui negant eandem esse et suum genus regiae faciunt
130 longioribus foliis latioribusque. iidem in alio genere bacaliam appellant hanc quae vulgatissima est bacarumque fertilissima, sterilem vero earum, quod maxime miror, triumphalem, eaque dicunt triumphantes uti, nisi id a divo Augusto coepit, ut docebimus, ex[1] ea lauru quae ei missa e caelo est minima altitudine, folio crispo, brevi, inventu rara. accedit in topiario opere Thasia,[2] excrescente in medio folio parvola veluti lacinia folii, et sine ea spadonina mira opacitatis patientia, itaque quanta-
131 libeat sub umbra solum implet. est et chamaedaphne silvestris frutex et Alexandrina, quam aliqui Idaeam, alii hypoglottion, alii danaen, alii carpophyllon, alii hypelaten vocant. ramos spargit a radice dodrantales, coronarii operis, folio acutiore quam myrti ac molliore et candidiore et maiore, semine inter folia rubro, plurima in Ida et circa
132 Heracleam Ponti, nec nisi in montuosis. id quoque quod daphnoidis vocatur genus in nominum ambitu

[1] et? *Mayhoff.*
[2] *V.l.* taxa.

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[a] 'With a tongue below': this seems more appropriate to the Thasos laurel mentioned above.
[b] 'With the berry attached to the leaf.'
[c] 'Throwing out shoots from underneath.'

the royal laurel, which has begun to be called the Augusta laurel, a very large tree with a very large leaf and berries without any rough taste. Some say that the royal laurel and the Augusta are not the same, and make out the royal to be a special kind, with longer and broader leaves. The same persons place in another class, under the name of bacalia, the laurel which is the commonest of all and bears the largest number of berries, but much to my surprise give the name of triumphal laurel to one that has no berries, and say that this is the one used by persons celebrating a triumph—unless the use of it began with his late Majesty Augustus, as we shall show, as § 137
sprung from the laurel which was sent down to him from heaven, which was a very low growing tree with a short, crinkled leaf, and very rarely met with. In ornamental gardening there is also the Thasos laurel, which has a tiny leafy fringe as it were growing out of the middle of the leaf, and the gelded laurel, without this fringe, which is remarkably able to stand lack of sun and which consequently fills the ground with its shoots in however shady a place. There is also the ground laurel, a shrub that grows wild, and Alexandrine laurel, which some call Idaean, others hypoglottion,[a] others Danae, others carpophyllon,[b] others hypelates.[c] This laurel spreads out branches 9 inches long from its root, and is useful for making wreaths; the leaf is more pointed than that of the myrtle, and softer, brighter in colour and larger; the seed, which lies between the leaves, is red; it grows in great abundance on Mount Ida and in the vicinity of Heraclea in Pontus, and it only occurs in mountain districts. Also the class of laurel called daphnoides is involved in a competition of nomenclature, as some

est: alii enim Pelasgum, alii eupetalon, alii stephanon Alexandri vocant. et hic frutex est ramosus, crassiore ac molliore quam laurus folio, cuius gustatu accendatur os, bacis e nigro rufis. notatum antiquis, nullum genus laurus in Corsica fuisse, quod nunc satum et ibi provenit.

133 XL. Ipsa pacifera, ut quam praetendi etiam inter armatos hostes quietis sit indicium. Romanis praecipue laetitiae victoriarumque nuntia additur litteris et militum lanceis pilisque, fasces imperatorum
134 decorat. ex his in gremio Iovis optimi maximique deponitur quotiens laetitiam nova victoria adtulit, idque non quia perpetuo viret, nec quia pacifera est, praeferenda ei utroque olea, sed quia spectatissima in monte Parnaso ideoque etiam grata Apollini visa, adsuetis eo dona mittere, oracula inde repetere iam et regibus Romanis teste L. Bruto, fortassis etiam in argumentum, quoniam ibi libertatem publicam is meruisset lauriferam tellurem illam osculatus ex responso, et quia manu satarum receptarumque in
135 domos fulmine sola non icitur. ob has causas equidem

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[a] See Livy I. 56. L. Junius, nephew of Tarquinius Superbus, in order to escape the fate of his elder brother whom Tarquin had murdered, feigned idiocy, and hence got the name of Brutus. He accompanied Tarquin's sons to Delphi to consult the oracle as to the portent of a snake that had appeared in the king's palace. The two princes took the opportunity of asking the oracle who should succeed to the throne. The answer given was: *The one who first kisses his mother.* Brutus pretended to stumble and kissed the earth, the mother of all mankind.

call it the Pelasgian laurel, others the leafy laurel, others Alexander's crown. This also is a bushy shrub, with a thicker and softer leaf than the ordinary laurel, which leaves a burning taste in the mouth; the berries are a blackish red. The older writers noted that there was no variety of laurel that grew in Corsica; but it has now been introduced there with successful results.

Laurel branches as tokens of armistice and of victory.

XL. The laurel itself is a bringer of peace, inasmuch as to hold out a branch of it even between enemy armies is a token of a cessation of hostilities. With the Romans especially it is used as a harbinger of rejoicing and of victory, accompanying despatches and decorating the spears and javelins of the soldiery and adorning the generals' rods of office. From this tree a branch is deposited in the lap of Jupiter the All-good and All-great whenever a fresh victory has brought rejoicing, and this is not because the laurel is continually green, nor yet because it is an emblem of peace, as the olive is to be preferred to it in both respects, but because it flourishes in the greatest beauty on Mount Parnassus and consequently is thought to be also dear to Apollo, to whose shrine even the kings of Rome at that early date were in the custom of sending gifts and asking for oracles in return, as is evidenced by the case of Brutus; another reason also is perhaps to supply a token, because it was there that Brutus won freedom for the people by kissing the famous plot of earth that bore the laurel, at the direction of the oracular utterance [a]; and another possible reason is that the laurel alone of all the shrubs planted by man and received into our houses is never struck by lightning. I personally am inclined to believe that it is for these reasons that the

crediderim honorem ei habitum in triumphis potius quam quia suffimentum sit caedis hostium et purgatio, ut tradit Masurius. adeoque in profanis usibus pollui laurum et oleam fas non est, ut ne propitiandis quidem numinibus accendi ex iis altaria araeve debeant. laurus quidem manifesto abdicat ignes crepitu et quadam detestatione, interaneorum etiam vitia et nervorum ligno torquente. Ti. principem tonante caelo coronari ea solitum ferunt contra fulminum metus.

136 Sunt et circa divum Augustum eventa eius digna memoratu. namque Liviae Drusillae, quae postea Augustam matrimonii nomen accepit, cum pacta esset illa Caesari, gallinam conspicui candoris sedenti aquila ex alto abiecit in gremium inlaesam, intrepideque miranti accessit miraculum, quoniam teneret in[1] rostro laureum ramum onustum suis bacis; conservari alitem et subolem iussere haruspices
137 ramumque eum seri ac rite custodiri: quod factum est in villa Caesarum fluvio Tiberi inposita iuxta nonum lapidem Flaminiae viae, quae ob id vocatur Ad gallinas; mireque silva ea provenit: ex ea triumphans postea Caesar laurum in manu tenuit

[1] *Mayhoff*: tenentem.

place of honour has been assigned to it in triumphs, rather than because it was employed, as Masurius records, for the purpose of fumigation and purification from the blood of the enemy. And it is so strongly forbidden to pollute the laurel and the olive in profane uses, that they must not be employed even for kindling a fire at altars and shrines in propitiating the deities. The laurel indeed manifestly expresses objection to the application of fire by crackling and making a solemn protest, the timber actually giving a twist to the cracks in its intestines and sinews. It is stated that the emperor Tiberius used to put a wreath from this tree on his head when there was a thunderstorm as a protection against danger from lightning.

Historical anecdotes as to the laurel.

There are also occurrences related to the laurel that are worth recalling in connexion with his late Majesty Augustus. When Livia Drusilla, who afterwards received the name of Augusta on her marriage, had been betrothed to Caesar, while she was seated an eagle dropped into her lap from the sky a hen of remarkable whiteness, without hurting it; she regarded it with wonder, but undismayed, and there was a further miracle: it was holding in its beak a laurel branch bearing its berries. So the augurs ordered that the bird and any chickens it produced should be preserved, and that the branch should be planted in the ground and guarded with religious care. This was done at the country mansion of the Caesars standing on the banks of the river Tiber about nine miles out on the Flaminian road; the house is consequently called *The Poultry*, and the laurel grove so begun has thriven in a marvellous way. Afterwards the Emperor when going in a triumph held a laurel branch from the original tree in his hand and

coronamque capite gessit, ac deinde imperatores Caesares cuncti; traditusque mos est ramos quos tenuerant [1] serendi, et durant silvae nominibus suis discretae, fortassis ideo mutatis triumphalibus.

138 Unius arborum Latina lingua nomen inponitur viris, unius folia distinguntur appellatione, lauream enim vocamus. durat et in urbe inpositum loco, quando Loretum in Aventino vocatur ubi silva laurus fuit. eadem purificationibus adhibetur; testatumque sit obiter et ramo eam seri, quoniam dubitavere Democritus atque Theophrastus.

Nunc dicemus silvestrium naturas.

[1] *Rackham*: tenuerunt.

wore a wreath of its foliage on his head, and subsequently every one of the ruling Caesars did the same; and the custom was established of planting the branches which they had held, and groves of laurels distinguished by their names [a] still survive; and it was perhaps in consequence of this that the change was made in the laurels worn in triumphs. § 130.

Its use in names. The laurel is the only tree the name of which is used in Latin as a man's name,[b] and the only tree whose leaves have a special name applied to them—we call them bay-leaves. The name of the tree also survives as a place-name in Rome, as there is a locality on the Aventine called Loretto where there was once a laurel grove. Moreover, the laurel is employed in rituals of purification; and incidentally it should be stated that it can even be grown from a slip, as this has been doubted by Democritus and Theophrastus.

We will now describe the various forest trees.

[a] *I.e.* each tree bearing the name of the emperor who had held the bough from which it had grown.

[b] *E.g.* Laurea Tullius, a freedman of Cicero: XXXI. 7.

BOOK XVI

LIBER XVI

I. Pomiferae arbores quaequae mitioribus sucis voluptatem primae cibis attulerunt et necessario alimento delicias miscere docuerunt, sive illae ultro sive [1] ab homine didicere blandos sapores adoptione et conubio—idque munus etiam [2] feris volucribusque dedimus [3]—intra praedictas constant. proximum erat narrare glandiferas, quae primae victum mortalium aluerunt nutrices inopis ac ferae sortis, ni praeverti cogeret admiratio usu conperta, quaenam qualisque esset vita sine arbore ulla, sine frutice viventium.

2 Diximus esse [4] in oriente quidem iuxta oceanum complures ea in necessitate gentes; sunt vero et in septentrione visae nobis Chaucorum qui maiores minoresque appellantur. vasto ibi meatu bis dierum noctiumque singularum intervallis effusus in inmensum agitur oceanus, operiens aeternam [5] rerum naturae controversiam dubiamque terrae [6] an partem
3 maris. illic, misera gens, tumulos optinent altos aut

[1] sive *add. edd. vet.*
[2] etiam a *Detlefsen.*
[3] *V.l.* didicimus.
[4] *Rackham*: diximus et.
[5] *V.l.* alternam.
[6] *Mayhoff*: terrae sit (terrae sit pars an maris *Cornelissen*).

[a] *I.e.*, grafting and inoculation.
[b] A variant text, adopted by Detlefsen, gives 'have also learnt from.'

BOOK XVI

I. Among the trees already mentioned are included the fruit-trees and those which by their mellower juices first added the element of pleasure to food and taught us to mingle relishes with our necessary nutriment, whether they did so of their own accord or whether they learnt from mankind to acquire agreeable flavours by means of adoption and intermarriage [a]—and this is a service which we have also rendered to [b] beasts and birds. Next would have come an account of the acorn-bearing trees which first produced food for mortal man and were the foster-mothers of his helpless and savage lot, if we were not compelled by a sense of wonder learnt from experience to turn first to the question, what is the nature and what are the characteristics of the life of people living without any trees or any shrubs. *Forest trees.*

We have indeed stated that in the east, on the shores of the ocean, a number of races are in this necessitous condition; but so also are the races of people called the Greater and the Lesser Chauci, whom we have seen in the north. There twice in each period of a day and a night the ocean with its vast tide sweeps in a flood over a measureless expanse, covering up Nature's age-long controversy and the region disputed as belonging whether to the land or to the sea. There this miserable race occupy elevated *Countries without trees.* XIII. 139.

tribunalia extructa manibus ad experimenta altissimi aestus, casis ita inpositis, navigantibus similes cum integant aquae circumdata, naufragis vero cum recesserint, fugientesque cum mari pisces circa tuguria venantur. non pecudem his habere, non lacte ali ut finitimis, ne cum feris quidem dimicare
4 contingit omni procul abacto frutice. ulva et palustri iunco funis nectunt ad praetexenda piscibus retia, captumque manibus lutum ventis magis quam sole siccantes terra cibos et rigentia septentrione viscera sua urunt. potus non nisi ex imbre servato scrobibus in vestibulo domus. et hae gentes, si vincantur hodie a populo Romano, servire se dicunt! ita est profecto: multis fortuna parcit in poenam.

5 II. Aliud e silvis miraculum: totam reliquam Germaniam referciunt[1] adduntque frigori umbras, altissimae tamen haut procul supra dictis Chaucis circa duos praecipue lacus. litora ipsa optinent quercus maxima aviditate nascendi, suffossaeque fluctibus aut propulsae flatibus vastas conplexu radicum insulas secum auferunt, atque ita libratae stantes navigant, ingentium ramorum armamentis saepe territis classi-

[1] referciunt? *Mayhoff* (operiunt *Detlefsen*): reperiunt *aut* referunt.

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[a] *I.e.* turves.

[b] A paraphrase of the verse *Fortuna multis parcere in poenam solet*, ascribed to Laberius. The meaning here seems to be that for backward races it is a misfortune *not* to be conquered by Rome.

[c] Forming the Zuyder Zee.

patches of ground or platforms built up by hand above the level of the highest tide experienced, living in huts erected on the sites so chosen, and resembling sailors in ships when the water covers the surrounding land, but shipwrecked people when the tide has retired, and round their huts they catch the fish escaping with the receding tide. It does not fall to them to keep herds and live on milk like the neighbouring tribes, nor even to have to fight with wild animals, as all woodland growth is banished far away. They twine ropes of sedge and rushes from the marshes for the purpose of setting nets to catch the fish, and they scoop up mud in their hands and dry it by the wind more than by sunshine, and with earth [a] as fuel warm their food and so their own bodies, frozen by the north wind. Their only drink is supplied by storing rain-water in tanks in the forecourts of their homes. And these are the races that if they are nowadays vanquished by the Roman nation say that they are reduced to slavery! That is indeed the case: Fortune oft spares men as a punishment.[b]

Forests of Germany.

II. Another marvel arising from the forests: these crowd the whole of the remainder of Germany and augment the cold with their shadow, but the loftiest grow not far from the Chauci mentioned above, especially round two lakes.[c] The actual shores of these are occupied by oaks, which grow with extreme eagerness, and these when undermined by the waves or overthrown by blasts of wind carry away with them vast islands of soil in the embrace of their roots, and thus balanced, float along standing upright, so that our fleets have often been terrified by the wide rigging of their huge branches, when they

bus nostris, cum velut ex industria fluctibus agerentur in proras stantium noctu inopesque remedii illae proelium navale adversus arbores inirent.

6 In eadem septentrionali plaga Hercyniae silvae roborum vastitas intacta aevis et congenita mundo prope inmortali sorte miracula excedit. ut alia omittantur fide caritura, constat attolli colles occursantium inter se radicum repercussu aut, ubi secuta tellus non sit, arcus ad ramos usque et ipsos inter se rixantes curvari portarum patentium modo, ut turmas equitum tramittant.

Glandiferi maxime generis omnes, quibus honos
7 apud Romanos perpetuus: III. hinc civicae coronae, militum virtutis insigne clarissimum, iam pridem vero et clementiae imperatorum, postquam civilium bellorum profano meritum coepit videri civem non occidere. cedunt his murales vallaresque et aureae, quamquam pretio antecedentes, cedunt et rostratae, quamvis in duobus maxime ad hoc aevi celebres, M. Varrone e piraticis bellis dante Magno Pompeio itemque M. Agrippa tribuente Caesare e
8 Siculis, quae et ipsa piratica fuere. antea rostra navium tribunali praefixa fori decus erant, veluti

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[a] See IV. 80 n.

[b] A Civic Wreath was voted by the senate to Julius Caesar as the saviour of the country, and thenceforward one was kept hung up at the door of the emperor's palace.

[c] A golden crown decorated with turrets was given to the first man who scaled the walls of a besieged city, and one ornamented with a palisade to the first who crossed a palisaded trench; and in particular one variety of triumphal crown was called *corona aurea*. One called *corona navalis* or *rostrata*, decorated with the 'beaks' of ships, was awarded to the first sailor who boarded an enemy ship, and later to a naval commander who won a signal victory.

seemed to be purposely driven by the waves against the bows of the ships at anchor for the night, which thus were unavoidably compelled to engage in a naval battle with trees.

In the same northern region is the vast expanse of the Hercynian oak forest,[a] untouched by the ages and coeval with the world, which surpasses all marvels by its almost immortal destiny. To omit other facts that would lack credence, it is well known that the collision of the roots encountering each other raises up hillocks of earth, or, where the ground has not kept up to them, their arches in their struggle with one another rise as high as the branches, and curve over in the shape of open gateways, so as to afford a passage to squadrons of cavalry.

They are practically all of the acorn-bearing class of oak, which is ever held in honour at Rome, *Wreaths of honour at Rome.* III. because from it are obtained the Civic Wreaths, that glorious emblem of military valour, but now for a long time past also an emblem of the emperors' clemency,[b] ever since, owing to the impiety of the civil wars, not to kill a fellow-citizen had come to be deemed meritorious. Below these rank mural crowns and rampart-crowns and also golden crowns,[c] although surpassing them in cost, and below them likewise are beaked crowns, albeit down to the present supremely famous in the case of two persons, Marcus Varro who was given this honour by Pompey 67 B.C. the Great as a result of the wars against the pirates, and likewise Marcus Agrippa who was awarded it 36 B.C. by Augustus after the Sicilian wars, which were also waged against pirates. Previously the forum was *The Rostra.* graced by the rams of ships fastened in front of the

p. R. ipsi corona inposita. postquam vero tribuniciis seditionibus calcari ac pollui coepere, postquam vires ex publico in privatum agi singulisque civium quaeri et sacrosancti omnia profana facere, tum a pedibus eorum subiere in capita civium rostra: dedit hanc Augustus coronam Agrippae, sed civicam a genere humano accepit ipse.

9 IV. Antiquitus quidem nulla nisi deo dabatur—ob id Homerus caelo tantum eam et proelio universo tribuit, viritim vero ne in certamine quidem ulli—feruntque primum omnium Liberum patrem imposuisse capiti suo ex hedera. postea deorum honori sacrificantes sumpsere victimis simul coronatis.
10 novissime et in sacris certaminibus usurpatae, in quibus hodieque non victori dantur sed patriam ab eo coronari pronuntiatur; inde natum ut et triumphaturis conferrentur in templis dicandae, mox ut et ludis darentur. longum est nec instituti operis disserere quis quamque Romanorum primus acceperit, neque enim alias noverant quam bellicas: quod

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[a] The platform in the forum from which speakers addressed the assemblies was decorated with 'beaks' or rams of ships taken from Antium after its revolt from Rome in 338 B.C.; it was itself called 'the Rams,' and has given us the word 'rostrum,' which is perhaps the source of the slang term 'beak,' meaning a magistrate on the bench.

[b] *Il.* XVIII. 485, *τείρεα πάντα τά τ' οὔρανος ἐστεφάνωται.*

[c] *Il.* XIII. 736, *πάντῃ γάρ σε περὶ στέφανος πολέμοιο δέδηεν.*

platform,[a] like a wreath crowning the Roman nation. But later they began to be trampled on and polluted by the seditions of the tribunes, and power began to pass from public into private ownership, and to be sought for the advancement of individual citizens, and the sacrosanct tribunes began to make all things profane; and after this the Rams passed from underneath the feet of the speakers to the heads of the citizens; this Wreath of Rams Augustus bestowed upon Agrippa, but he himself received the Civic Wreath from the whole of mankind.

History of wreaths of honour.

IV. In olden times indeed no Civic Wreath was presented save to a deity—that is why Homer assigns a wreath only to heaven [b] and to a whole battle-field,[c] but to no man individually even in combat—and it is said that father Liber was the first to set a crown on his own head, a wreath of ivy. Afterwards persons performing sacrifices in honour of the gods assumed crowns, the victims being adorned with wreaths as well. Most recently of all they were also brought into use in ritual competitions, but in these and at the present day they are not bestowed on the winner, but an announcement is made that by him a wreath is conferred upon his native place; and from this has arisen the custom of also bestowing wreaths on victorious generals about to go in a triumphal procession, for them to dedicate as offerings in the temples, and also subsequently the practice of presenting wreaths at the games. To discuss who was the first Roman to receive each kind of wreath would be a lengthy matter, and not relevant to the plan of this work, and as a matter of fact the Romans were only acquainted with those given for military achievements; but it is a well-known

certum est, uni gentium huic plura sunt genera quam cunctis.

11 V. Romulus frondea coronavit Hostum Hostilium, quod Fidenam primus inrupisset: avus hic Tulli Hostilii regis fuit. P. Decium patrem tribunum militum frondea donavit exercitus ab eo servatus imperatore Cornelio Cosso cos. Samnitium bello. civica iligna primo fuit, postea magis placuit ex aesculo Iovi sacra, variatumque et cum quercu est ac data ubique quae fuerat custodito tantum honore
12 glandis. additae leges artae et ideo superbae quasque conferre libeat cum illa Graecorum summa quae sub ipso Iove datur cuique muros patria gaudens rumpit: civem servare, hostem occidere, ut ne eum [1] locum in quo sit actum hostis optineat eo die, ut servatus fateatur—alias testes nihil prosunt—
13 ut civis fuerit: auxilia quamvis rege servato decus non dant. nec crescit honos idem imperatore conservato, quoniam conditores in quocumque cive [2] summum esse voluere. accepta licet uti perpetuo;

[1] *Ian*: ut eum.
[2] *V.l.* civem.

[a] The First Samnite War, 343–341 B.C.
[b] *I.e.*, the honour of providing a Civic Wreath always fell to an acorn-bearing tree of some variety.

fact that this one nation has a greater variety of wreaths than all the other nations put together.

V. Hostus Hostilius, who was the grandfather of King Tullus Hostilius, was crowned by Romulus with a garland of leaves for having been the first to enter Fidena. The elder Publius Decius, who was military tribune, received a garland of leaves from the army which he had saved from destruction in the war[a] with the Samnites when the consul Cornelius Cossus was in command of our army. The Civic Wreath was first made of the leaves of the holm-oak, but afterwards preference was given to a wreath from the winter oak, which is sacred to Jove, and also a variety was made with the common oak and the tree growing in the particular locality was given, only the honour awarded to the acorn being preserved.[b] Strict and therefore exclusive conditions were further imposed, which may be compared with that supreme wreath of the Greeks which is bestowed beneath the tutelage of Zeus himself and for which the winner's native place in its rejoicing breaks a passage through its city walls; these conditions were—to save the life of a fellow-citizen; to kill one of the enemy; that the place where the exploit occurred must not be occupied by the enemy on the same day; that the person rescued must admit the fact—witnesses otherwise are of no value;—and that it must have been a Roman citizen: auxiliary forces, even though it is a king who is rescued, do not bestow this distinction. Nor is the same honour any greater if the rescued person is a general, because the founders of this institution wished the honour to be supreme in the case of any citizen. The receiver of the wreath may wear it for the rest of his life; when he appears

Varieties of foliage used and conditions of award.

343 B.C.

ludis ineunti semper adsurgi etiam ab senatu in more est, sedendi ius in proximo senatui; vacatio munerum omnium ipsi patrique et avo paterno.
14 XIV eas accepit Siccius Dentatus, ut retulimus suo loco, VI Capitolinus, is quidem et de duce Servilio. Africanus de patre accipere noluit apud Trebiam. o mores aeternos qui tanta opera honore solo donaverint et, cum reliquas coronas auro commendarent, salutem civis in pretio esse noluerint, clare professi ne servari quidem hominem fas esse lucri causa!

15 VI. Glande opes nunc quoque multarum gentium etiam pace gaudentium constant. nec non et inopia frugum arefactis emolitur farina spissaturque in panis usum; quin et hodieque per Hispanias secundis mensis glans inseritur. dulcior eadem in cinere tosta. cautum est praeterea lege XII tabularum ut glandem in alienum fundum procidentem
16 liceret colligere. genera earum multa; distant fructu, situ, sexu, sapore; namque alia fageae glandi figura, quernae alia et ilignae, atque inter se quoque generum singulorum differentiae. praeterea sunt aliquae silvestres, aliae placidiores quae culta

[a] Hannibal's second victory in the first year of the Second Punic War, 218 B.C.

at the games it is the custom for even the senate always to rise at his entrance, and he has the right to sit next to the senators; and he himself and his father and his paternal grandfather are exempt from all public duties. Siccius Dentatus, as we have mentioned at the proper place, won fourteen Civic Wreaths, and Capitolinus six, one in his case being actually for saving the life of his commanding officer Servilius. Scipio Africanus refused to accept a wreath for rescuing his father at the Trebbia.[a] How worthy of eternity is a national character that rewarded exploits so distinguished with honour only, and whereas it enhanced the value of its other wreaths with gold, refused to allow the rescue of a citizen to be a thing of price, thus loudly proclaiming that it is wrong even to save the life of a human being for the sake of gain! VII. 102.

Acorns as food; acorn-flour.

VI. Acorns at this very day constitute the wealth of many races, even when they are enjoying peace. Moreover also when there is a scarcity of corn they are dried and ground into flour which is kneaded to make bread; beside this, at the present day also in the Spanish provinces a place is found for acorns in the second course at table. Acorns have a sweeter flavour when roasted in the ashes. Moreover it was provided by law in the Twelve Tables that it was permissible to gather up acorns falling on to another person's land. There are many kinds of acorns, and they differ in their fruit, habitat, sex and flavour, some having the shape of the beech-nut and others of the mast of the oak and the holm-oak, and there are also differences within each of these varieties. Moreover some grow wild in forests and others are more tame, occupying cultivated

optinent. iam in montuosis planisque distant, sicut et sexu mares ac feminae, item sapore: dulcissima omnium fagi, ut qua obsessos etiam homines durasse
17 in oppido Chio tradat Cornelius Alexander. genera distinguere non datur nominibus, quae sunt alia alibi, quippe cum robur quercumque vulgo nasci videamus, aesculum non ubique, quartam vero generis eiusdem quae cerrus vocatur ne Italiae quidem maiore ex parte notam esse. distinguemus ergo proprietate naturaque et, ubi res coget, etiam Graecis nominibus.

18 VII. Fagi glans nucleis similis triangula cute includitur. folium tenue atque e levissimis, populeo simile, celerrime flavescens et media parte plerumque gignens superne parvolam bacam viridem cacumine aculeatam. fagum muribus gratissimum est, et ideo animalis eius una proventus; glires quoque saginat, expedit et turdis. arborum fertilitas omnium fere alternat, sed maxime fagi.

19 VIII. Glandem quae proprie intellegitur ferunt robur, quercus, aesculus, cerrus, ilex, suber. continent hispido calyce per genera plus minusve conplectente. folia praeter ilicem gravia, carnosa, procera, sinuosa

ground. Then they are different in mountain regions and in the plains, as also they differ in sex —male and female, and likewise in flavour: the sweetest of them all is beech-mast, it being recorded by Cornelius Alexander that the people in the town of Chios actually held out against a siege by using it for food. It is not possible to distinguish its kinds by their names, which are different in different places, inasmuch as we see the hard-oak and the common oak growing everywhere, but the winter oak not in every region, and the fourth species of the same class, called the Turkey oak, is not known at all even to the greater part of Italy. We will therefore distinguish the varieties by their properties and natures, also using the Greek names when necessary.

VII. The acorn of the beech resembles a kernel, being enclosed in a triangular shell. The leaf, which is thin and one of the lightest that there are, resembles that of the poplar; it turns yellow very quickly, and on its upper side, usually at the middle, it grows a little green berry with a pointed end. Mice are extremely fond of the beech and consequently in places where it grows these animals abound; it also fattens dormice, and is good for thrushes, too. Almost all trees grow a good crop only every other year, but this is especially the case with the beech. *Beech-mast.*

VIII. The trees that bear acorns in the proper sense of the term are the hard-oak, the common oak, the winter oak, the Turkey oak, the holm-oak and the cork tree. These trees carry their acorn enclosed in a bristly cup that embraces more or less of it according to their kinds. Their leaves with the exception of the holm-oak are heavy, fleshy and tapering, *Varieties of acorn.*

lateribus, nec cum cadunt flavescentia ut fagi, pro differentia generum breviora vel longiora.

Ilicis duo genera. ex his in Italia folio non ita multum ab oleis distant milaces a quibusdam Graecis dictae; in provinciis aquifoliae sunt ilices. glans utriusque brevior et gracilior, quam Homerus aculon appellat eoque nomine a glande distinguit. masculas ilices negant ferre.

20 Glans optima in quercu atque grandissima, mox aesculo, nam robori parva, cerro tristis, horrida echinato calyce ceu castaneae. sed et in querna alia dulcior molliorque feminae, mari spissior. maxime autem probantur latifoliae ex argumento dictae: distant inter se magnitudine et cutis tenuitate, item quod aliis subest tunica robigine scabra,
21 aliis protinus candidum corpus. probatur et ea cuius in balano utrimque ex longitudine extrema lapidescit duritia, melior cui in cortice quam cui in corpore, utrumque non nisi mari. praeterea aliis ovata, aliis rotunda, aliis acutior figura, sicut et colos nigrior candidiorve, qui praefertur. amaritudo in extremi-

with wavy edges, and they do not turn yellow when they fall like beech leaves; they differ in length according to the variety of their kinds.

There are two classes of holm-oak. The Italian variety, called by some Greeks milax, has a leaf not very different from that of the olive, but the holm-oak in the provinces is the one with pointed leaves. The acorn of both kinds is shorter and more slender than that of other varieties; Homer calls it akylon and distinguishes it by that name from the common acorn. It is said that the male holm-oak bears no acorns. *Od.* XI. 242.

The best and largest acorn grows on the common oak, and the next best on the winter oak, as that of the hard-oak is small, and that of the Turkey oak a rough, bristly thing with a prickly cup like that of the chestnut. But also in the case of the oak in general the acorn of the female tree is sweeter and softer, while that of the male tree is more compact. In the most esteemed variety called descriptively the broad-leaved oak, the acorns differ among themselves in size and in the thinness of their shell, and also in that some have under the shell a rough coat of a rusty colour, whereas in others one comes to the white flesh at once. Those acorns are also esteemed the kernel of which at each extremity taken lengthwise has a stony hardness, those having this in the husk being better than those with it in the flesh of the nut, but in either case it only occurs with a male tree. Moreover in some cases the acorn is oval, in others round, and in others of a more pointed shape, just as the colour also is blacker or lighter, the latter being preferred. The ends of acorns are bitter and the middle parts

tatibus, mediae dulces; quin et pediculi brevitas proceritasque differentiam habet.

22 In ipsis vero arboribus quae maximam fert hemeris vocatur, brevior et in orbem comosa alasque ramorum crebro cavata. fortius lignum quercus habet et incorruptius, ramosa et ipsa, procerior tamen et crassior caudice; excelsissima autem aegilops, incultis amica.

23 Ab hac proxima latifoliae proceritas, sed minus utilis aedificiis atque carboni, dolata vitiis obnoxia est, quamobrem solida utuntur. carbo in aerariorum tantum officinis conpendio, quoniam desinente flatu protinus emoriens saepius recoquitur, ceterum plurimus scintillis. idem e novellis melior. acervi consertis taleis recentibus luto caminantur, accensa strue contis pungitur durescens calyx atque ita sudorem emittit.

24 Pessima et carboni et materiae haliphloeos dicta, cui crassissimus cortex atque caudex et plerumque cavus fungosusque; nec alia ita [1] putrescit ex hoc genere, etiam cum vivit. quin et fulmine saepissime icitur,[2] quamvis altitudine non excellat; ideo ligno eius nec ad sacrificia uti fas habetur. eidem rara glans et, cum tulit, amara, quam praeter sues nullum

[1] pariter *vel* ita *add.?* *ex Theophrasto Mayhoff.*
[2] *Edd.*: iacitur.

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[a] The identification of this variety is uncertain.
[b] Or perhaps 'and which makes a dense canopy of spreading branches,' *i.e.*, spreads out its branches evenly like the ribs of an umbrella.
[c] A variety of oak with edible acorns.

sweet; also there is a difference in the shortness or length of the stalk.

In respect of the trees themselves the one that bears the largest acorn is called the hemeris;[a] this is a comparatively low-growing oak which forms a circle of bushy foliage and which is frequently hollow at the spread of the branches.[b] The wood of the common oak is stronger and less liable to decay; this variety also has many branches, but grows higher and has a thicker trunk; but the loftiest kind is the aegilops,[c] which likes wild uncultivated country. *Varieties of oak and of oak-timber.*

Next to this in height is the broad-leaved oak, but it is less useful for builders' timber and for charcoal, and when hewn with the axe is liable to split, on which account it is used in the unhewn state. As charcoal it only pays to use it in a copper-smith's workshop, because as soon as the bellows stop it dies down and has to be rekindled repeatedly; but it gives out a great quantity of sparks. A better charcoal is obtained from young trees. Piles of freshly cut sticks are fitted closely together and made into an oven with clay, and the structure is set fire to, and the shell as it hardens is prodded with poles and so discharges its moisture.

The worst kind both for charcoal and for timber is the one called in Greek the 'sea-cork' oak, which has a very thick bark and trunk, the latter usually hollow and spongy; and no other variety of the oak class is so liable to rot, even while it is alive. Moreover it is very frequently struck by lightning, although it is not particularly lofty; consequently it is not thought right to use its wood for sacrifices either. Also it rarely bears acorns, and when it does they are bitter, so that no animal will touch them

attingat animal, ac ne hae quidem si aliud pabulum habeant. hoc quoque inter reliqua neglectae religionis est quod emortuo carbone sacrificatur.

25 Glans fagea suem hilarem facit, carnem cocibilem ac levem et utilem stomacho, iligna suem angustam, non[1] nitidam, strigosam; ponderosam querna, diffusam, grandissima[2] et ipsa glandium atque dulcissima. proximam huic cerream tradit Nigidius, nec ex alia solidiorem carnem, sed duram. iligna temptari sues, nisi paulatim detur; hanc novissimam cadere. fungosam carnem fieri aesculo, robore, subere.

26 IX. Quae glandem ferunt omnes et gallam alternisque annis glandem, sed gallam hemeris optimam et coriis perficiendis aptissimam; similem huic latifolia, sed leviorem multoque minus probatam. fert et nigram—duo enim genera sunt; haec tinguendis
27 lanis utilior. nascitur autem galla sole de geminis exeunte erumpens noctu semper universa. crescit uno die candidior et, si aestu excepta est, arescit protinus neque ad iustum incrementum pervenit, hoc est ut nucleum fabae magnitudine habeat. nigra

[1] non *add. Rackham*: innitidam? *Warmington.*
[2] *Mueller*: gravissima.

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[a] The MSS. omit this negative.
[b] Towards the end of June.

except swine, and not even these if they can get any other fodder. An additional reason among others for its being disregarded for religious ceremonies is that its charcoal goes out during the course of a sacrifice.

Acorns and mast as fodder. Beech-mast fed to pigs livens them up, and makes their flesh easy to cook and light and digestible; whereas the acorns of the holm-oak make a pig thin, not[a] glossy, meagre. Acorns from the common oak make it heavy and lumpish, being themselves also the largest of nuts and the sweetest in flavour. According to Nigidius's account the next best to the common acorn is the acorn of the Turkey oak, and no other kind gives the pig more solid flesh, though hard. He says that holm-oak acorn is a trying feed for pigs, unless given to them in small quantities at a time; and that this is the latest acorn to fall. He adds that the acorn of the winter oak, hard-oak and cork-tree make a pig's flesh spongy.

Oak galls. IX. All the acorn-bearing trees produce oak-apples as well, and acorns in alternate years, but the hemeris bears the best oak-apple and the one most suitable for dressing hides. The oak-apple of the broad-leaved oak resembles it, but is lighter in weight and much less highly approved. This tree also produces the black oak-apple—for there are two varieties, this last being more useful for dyeing wool. The oak-apple begins to grow when the sun is leaving the sign of the Twins,[b] and always bursts forth full-size in a night. The lighter-coloured variety grows in a single day, and if it encounters a spell of heat it dries up at once and does not attain its proper growth, that is, to have a kernel the size of a bean. The black oak-apple stays fresh

diutius viret crescitque, ut interdum mali conpleat magnitudinem. optima Commagena, deterrima ex robore; signum eius quod cavernae tralucent.

28 X. Robur praeter fructum plurima et alia gignit. namque fert et gallae utrumque genus et quaedam veluti mora, ni distarent arida duritie, plerumque et [1] tauri caput imitantia, quibus fructus inest nucleis olivae similis. nascuntur in eo et pilulae nucibus non absimiles, intus habentes floccos molles lucernarum luminibus aptos; nam et sine oleo flagrant sicuti galla nigra. fert et aliam inutilem pilulam cum
29 capillo, verno tamen tempore melliginis suci. gignunt et alae ramorum eius pilulas corpore non pediculo adhaerentes, candicantibus umbilicis, cetera nigra varietate dispersa; media cocci colorem habent, apertis amara [2] inanitas est. aliquando et pumices gignit nec non et e foliis convolutas pilulas et in foliorum venis aquosos nucleos candicantes ac tralucidos quamdiu molles sint, in quibus et culices nascuntur. maturescunt in ⟨nodum ad parvae levis gallae⟩ [3] modum.

30 XI. Ferunt robora et cachrym: ita vocatur pilula in medicina urendi vim habens. gignitur et in abiete, larice, picea, tilia, nuce, platano, postquam

[1] et *add. Mayhoff.*
[2] atra *Pintianus.*
[3] *Add. Ian coll. Theophr.*

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[a] Perhaps this should be altered to 'black,' to agree with Theophrastus.

and goes on growing for a longer period, so as sometimes to reach the size of an apple. The best kind comes from Commagene, and the worst is that produced by the hard-oak; it can be detected by the transparent hollows in it.

X. The hard-oak supplies a number of other products in addition to acorns; it also bears both kinds of oak-apples, and berries that are like mulberries except that they are dry and hard, also usually resembling a bull's head, which contain a fruit like the stone of an olive. There also grow on it little balls not unlike nuts, having inside them soft flocks of wool suitable for lamp-wicks, since they will keep burning even without oil, as is also the case with the black oak-apples. The hard-oak also bears another sort of little ball with hairs on it, which is of no use, though in spring-time it has a juice that is like bee-glue. Also in the hollows at the junction of its boughs grow little balls adhering bodily to the bark and not attached by a stalk, the point of attachment being white but the remainder speckled with black patches; inside they have a scarlet colour, but when opened they are bitter [a] and empty. Sometimes also the hard-oak bears growths resembling pumice-stone, as well as little balls made of the leaves rolled up, and also on the veins of the leaves watery pustules of a white colour, and as long as they remain soft permeable to light, in which gnats are born. When they ripen they form a knot like the small smooth oak-apple.

XI. Hard-oaks also bear catkins: that is the name of a small round ball used in medicine for its caustic property. It also grows on the fir, the larch, the pitch-pine, the lime, nut-trees and the plane,

folia cecidere hieme durans. continet nucleum pineis similem; is crescit hieme, aperitur vere. pilula tota
31 cadit cum folia coepere crescere. tam multifera sunt, tot res praeter glandem pariunt robora, sed et boletos suillosque, gulae novissima inritamenta, qui circa radices gignuntur, quercus probatissimos, robur autem et cupressus et pinus noxios. robora ferunt et viscum, et mella ut auctor est Hesiodus, constatque rores melleos e caelo, ut diximus, cadentes non aliis magis insidere frondibus; crematoque[1] robore cinerem nitrosum esse certum est.

32 XII. Omnes tamen has eius dotes ilex solo provocat cocco. granum hic primoque ceu scabies fruticis, parvae aquifoliae ilicis: scolecium[2] vocant. pensionem alteram tributi pauperibus Hispaniae donat. usum eius grani et rationem[3] in conchyli mentione tradidimus. gignitur et in Galatia, Africa, Pisidia, Cilicia, pessimum in Sardinia.

33 XIII. Galliarum glandiferae maxime arbores agaricum ferunt; est autem fungus candidus, odoratus, antidotis efficax, in summis arboribus nascens, nocte relucens: signum hoc eius quo in tenebris decerpitur.

[1] *Mayhoff*: quoque.
[2] *Detlefsen coll.* XXIV 8: cusculium *aut* cuscolium.
[3] *Mayhoff*: eius grationem *aut* eius generationem.

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[a] This is really juice exuded from 'green-fly' on the leaves.
[b] Pliny here describes the scarlet-producing *kermes*-insect which infests the small *Quercus coccifera*.
[c] A species of non-edible *Fomes*.

lasting on in the winter after the leaves have fallen. It contains a kernel resembling the kernel of pine-cones; this grows in winter and opens out in spring. When the leaves have begun to grow, the whole ball falls off. Such is the multiplicity of products in addition to the acorn that are borne by hard-oaks; but they also produce edible fungi and hog-mushrooms, the most recently discovered stimulants of the appetite, which grow round their roots; those of the common oak are the most esteemed, but those of the hard-oak and cypress and pine are harmful. Hard-oaks also produce mistletoe, and honey as well according to Hesiod, and it is an accepted fact that honey-dew falling from the sky,[a] as we said, deposits itself on the leaves of no other tree in preference to the hard-oak; and it is well known that hard-oak wood when burnt produces a nitrous ash. *W.D.* 232. XI. 30.

The kermes-insect. XII. Nevertheless the holm-oak challenges all these products of the hard-oak on the score of its scarlet alone. This is a grain, and looks at first like a roughness on a shrub, which is the small pointed-leaf holm-oak. The grain is called scolecium, 'litte worm'.[b] It furnishes the poor in Spain with the means of paying one out of every two instalments of their tribute. We have stated the use of this grain and the mode of preparing it when speaking of purple dye. It occurs also in Galatia, Africa, Pisidia and Cilicia, and the worst kind in Sardinia. IX. 140 f.

Fungus on oaks. XIII. In the Gallic provinces chiefly the acorn-bearing trees produce agaric,[c] which is a white fungus with a strong odour, and which makes a powerful antidote; it grows on the tops of trees, and is phosphorescent at night; this is its distinguishing mark, by which it can be gathered in the dark. Of the

e glandiferis sola quae vocatur aegilops fert pannos arentes, muscoso villo canos, non in cortice modo verum et e ramis dependentes cubitali magnitudine, odoratos, uti diximus inter unguenta.

34 Suberi minima arbor, glans pessima et rara, cortex tantum in fructu, praecrassus ac renascens atque etiam in denos pedes undique explanatus: usus eius ancoralibus maxime navium piscantiumque tragulis et cadorum obturamentis, praeterea in hiberno feminarum calceatu. quamobrem non infacete Graeci corticis arborem appellant. sunt et qui feminam ilicem vocent atque, ubi non nascitur ilex, pro ea subere utantur in carpentariis praecipue fabricis, ut circa Elim et Lacedaemonem. nec in Italia tota nascitur aut in Gallia omnino.

35 XIV. Cortex et fagi, tiliae, abietis,[1] piceae, in magno usu agrestium. vasa eo corbesque ac patentiora quaedam messibus convehendis vindemiisque faciunt atque proiecta[2] tuguriorum. scribit in recenti ad duces explorator incidens litteras †a suco†;[3] nec non et in quodam usu sacrorum religiosus est fagi cortex, sed non durat arbor ipsa.

[1] *Sic Warmington*: fagis, tiliae, abieti.
[2] *Hardouin*: protecta.
[3] incisas literas tegente suco *Dalec.*

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[a] Some kind of lichen is referred to.

[b] The reference is to cork floats used either to carry the end of a mooring-cable left attached to an anchor or a stone on the bottom of a harbour or roadstead, or to carry the top edge of a fishing-net held taut by weights along its bottom edge.

[c] The Greek name for the *Quercus Suber* was φελλός, a word also used for the cork floats on a net; for bark they used φλοιός.

[d] The words *a suco* have evaded plausible explanation or emendation. The general sense is that a message was scratched on a strip of bark freshly peeled off a tree, and that owing to

acorn-bearing tree the one called the aegilops alone carries strips of dry cloth [a] covered with white mossy tufts; this substance not only grows on the bark but hangs down from the branches in streamers eighteen inches long, and it has a strong scent, as we said when dealing with perfumes. XII. 108.

Cork-tree. The cork is a very small tree, and its acorns are very bad in quality and few in number; its only useful product is its bark, which is extremely thick and which when cut grows again; when flattened out it has been known to form a sheet as big as 10 feet square. This bark is used chiefly for ships' anchor drag-ropes and fishermen's [b] drag-nets and for the bungs of casks, and also to make soles for women's winter shoes. Consequently the Greek name for the tree is 'bark-tree,' which is not inappropriate.[c] Some people also call it the female holm-oak, and in places where the holm-oak does not grow, for instance in the districts of Elis and Sparta, use cork-tree timber instead of holm-oak, especially for wainwright's carpentry. It does not grow all over Italy or anywhere in Gaul.

Bark of other trees used. XIV. Also in the case of the beech, the lime, the fir and the pitch-pine the bark is extensively used by country people. They employ it for making panniers and baskets, and larger flat receptacles used for carrying corn at harvest-time and grapes at the vintage, and the roof-eaves of cottages. A scout writes reports to send to his officers by cutting letters on fresh bark from the sap; [d] and also beech bark is used for ritual purposes in certain religious rites, but the tree from which it is stripped does not survive.

the sap the incisions closed up, but opened again later on when the sap dried, so that the writing became legible.

36 XV. Scandula e robore aptissima, mox e glandiferis aliis fagoque, facillima ex omnibus quae resinam ferunt, sed minime durans praeterquam e pino. scandula contectam fuisse Romam ad Pyrrhi usque bellum annis CCCCLXX Cornelius Nepos auctor est.
37 silvarum certe distinguebatur insignibus, Fagutali Iove etiam nunc ubi lucus fageus fuit, Porta Querquetulana, Colle Viminali[1] in quem vimina petebantur, totque Lucis, quibusdam et geminis. Q. Hortensius dictator, cum plebes secessisset in Ianiculum, legem in Aesculeto tulit ut quod ea iussisset omnes Quirites teneret.

38 XVI. Peregrinae tum videbantur, quoniam non erant suburbanae, pinus atque abies omnesque quae picem gignunt. de quibus nunc dicemus, simul ut tota condiendi vina origo cognoscatur, quae ferunt in Asia aut oriente praedictis.

Picem in Europa sex genera cognatarum arbòrum ferunt. ex his pinus atque pinaster folium habent capillamenti modo praetenue longumque at mucrone aculeatum. pinus fert minimum resinae, interdum et nucibus ipsis de quibus dictum est, vixque ut adscri-

[1] Viminali *add. Rackham.*

[a] The war with Pyrrhus began A.U.C. 473, 281 B.C.
[b] On the Esquiline Hill were the Lucus Mefitis, Lucus Iunonis Lucinae, Lucus Fagutalis, Lucus Larum and Querquetulanum Sacellum.

XV. The most suitable roof-shingles are got from the hard-oak, and the next best from the other acorn-bearing trees and from the beech; those most easily obtained are cut from all the trees that produce resin, but these are the least good to last with the exception of those from the pine. Cornelius Nepos informs us that Rome was roofed with shingles right down to the war with Pyrrhus, a period of 470 years.[a] At all events its different regions used to be denoted by designations taken from the woods [b]—the Precinct of Jupiter of the Beech Tree (which retains the name even to-day)—where there was once a grove of beeches, Oak-forest Gate, Osier Hill, where people went to get osiers, and all the Groves, some even named from two sorts of trees. It was in Winter-oak Grove that Quintus Hortensius as dictator after the secession of the plebeians to the Janiculum Hill carried the law that an order of the plebs should be binding on all citizens.

Roof-shingles.

Trees in various parts of Rome.

287 B.C.

XVI. The pine and the fir and all the trees that produce pitch were in those days considered exotics, because there were none in the neighbourhood of the capital. Of these trees we shall now speak, in order that the whole of the source from which flavouring for wine is produced may be known at once, after an account has been given of the trees in Asia or the East which produce pitch.

Trees yielding pitch.

In Europe pitch is produced by six kinds of trees, all related to one another. Of these the pine and the wild pine have a very narrow long leaf like hair, with a sharp point at the end. The pine yields the smallest amount of resin, sometimes also produced from its nuts themselves, about which we have spoken, and scarcely enough to justify its classification as a resinous

xv. 35.

39 batur generi. XVII. pinaster nihil est aliud quam pinus silvestris minor altitudine et a medio ramosa sicut pinus in vertice. copiosiorem dat haec resinam quo dicemus modo. gignitur et in planis. easdem arbores alio nomine esse per oram Italiae quas tibulos vocant plerique arbitrantur, sed graciles succinctioresque et enodes liburnicarum ad usus, paene sine resina.

40 XVIII. Picea montis amat atque frigora, feralis arbor et funebri indicio ad fores posita ac rogis virens, iam tamen et in domos recepta tonsili facilitate. haec plurimam fundit interveniente candida gemma tam simili turis ut mixta visu discerni non queat; unde
41 fraus Seplasiae. omnibus his generibus folia brevia sed crassiora duraque ceu cupressis. piceae rami paene statim ab radice modici velut bracchia lateribus inhaerent.

Similiter abieti expetitae navigiis situs in excelso
42 montium, ceu maria fugerit, nec forma alia. materies vero praecipua est trabibus et plurimis vitae operibus. resina in ea[1] vitium, unde fructus piceae,

[1] *Mayhoff*: resinae.

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[a] A street in Capua occupied entirely by perfumers' shops.

tree. XVII. The pinaster is nothing else but a wild pine tree of smaller height throwing out branches from the middle as the pine does at the top. This variety gives a larger quantity of resin, in the manner which we shall describe. It grows in flat countries also. Most people think that trees called tibuli that grow along the coasts of Italy are the same tree with another name, but the tibulus is a slender tree and more compact than the pinaster, and being free from knots is used for building light gallies; it is almost devoid of resin. *Wild pine.* §§ 57 f.

XVIII. The pitch-pine loves mountains and cold localities. It is a funereal tree, and is placed at the doors of houses as a token of bereavement and grown on graves; nevertheless nowadays it has also been admitted into our homes because of the ease with which it can be clipped into various shapes. This pine gives out a quantity of resin interspersed with white drops so closely resembling frankincense that when mixed with it they are indistinguishable to the eye; hence the adulteration is practised in the Seplasia.[a] All these classes of trees have short leaves, but rather thick and hard like the leaf of the cypress. The branches of the pitch-pine are of moderate size and grow out almost immediately from the root of the tree, attached to its sides like arms. *Pitch-pines and firs.*

Similarly the fir, which is in great demand for building ships, grows high up on mountains, as though it had run away from the sea; and its shape is the same as that of the pitch-pine. But it supplies excellent timber for beams and a great many of the appliances of life. Resin, which gives its value to the pitch-pine, is a defect in the fir, which occasionally

exiguumque sudat aliquando contactu solis. e diverso materies, quae abieti pulcherrima, piceae ad fissiles scandulas cupasque et pauca alia secamenta.

43 XIX. Quinto generi est situs idem, facies eadem; larix vocatur. materies praestantior longe, incorrupta aevis,[1] umori contumax, rubens praeterea et odore acrior. plusculum huic erumpit liquoris melleo colore atque lentore,[2] numquam durescentis.

44 Sextum genus est taeda proprie dicta, abundantior suco quam reliqua, parcior liquidiorque quam picea, flammis ac lumini sacrorum etiam grata. hae, mares dumtaxat, ferunt et eam quam Graeci sycen vocant, odoris gravissimi. laricis morbus est ut taeda fiat.

45 Omnia autem haec genera accensa fuligine inmodica carbonem repente expuunt cum eruptionis crepitu eiaculanturque longe excepta larice quae nec ardet nec carbonem facit nec alio modo ignis vi consumitur quam lapides. omnia ea perpetuo virent nec facile discernuntur in fronde etiam a peritis,
46 tanta natalium mixtura est; sed picea minus alta quam larix, illa crassior leviorque cortice, folio villosior, pinguior et densior mollius flexo; at piceae rariora

[1] *Mayhoff*: incorrupta ac vis.
[2] *Sillig*: lentiora *aut* recentiora.

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[a] *Pinus combra.*
[b] *Συκέα, συκῆ*, 'fig-tree,' also 'fig,' is used to denote tar or resin by Theophrastus.
[c] Except the larch, which is deciduous.

exudes a small quantity when exposed to the action of the sun. The wood, on the contrary, which in the case of the fir is extremely beautiful, in the pitch-pine only serves for making split roof-shingles and tubs and a few other articles of joinery.

XIX. The fifth kind of resinous tree has the same habitat and the same appearance; it is called the larch. Its timber is far superior, not rotting with age and offering a stubborn resistance to damp; also it has a reddish colour and a rather penetrating scent. Resin flows from this tree in rather large quantities, of the colour and stickiness of honey, and never becoming hard. *Larch.*

The sixth kind is the torch-pine[a] specially so called, which gives out more resin than the rest, but less, and of a more liquid kind, than the pitch-pine; and it is agreeable for kindling fires and also for torch-light at religious ceremonies. These trees, at all events the male variety, also produce the extremely strong-smelling liquid called by the Greeks *syce.*[b] It is a disease of the larch to turn into a torch-pine. *Torch-pine.*

All these kinds of trees when set fire to make an enormous quantity of sooty smoke and suddenly with an explosive crackle send out a splutter of charcoal and shoot it to a considerable distance—excepting the larch, which does not burn nor yet make charcoal, nor waste away from the action of fire any more than do stones. All these trees[c] are evergreen, and are not easily distinguishable in point of foliage even by experts, so closely are they interrelated; but the pitch-pine is not so tall as the larch, which has a thicker and smoother bark and more velvety and oilier and thicker foliage, the leaf bending more softly to the touch, whereas the foliage *Properties of resinous trees.*

siccioraque folia et tenuiora ac magis algentia, totaque horridior et perfusa resina, lignum abietis similius. larix ustis radicibus non repullulat, ⟨picea repullulat⟩,[1] ut in Lesbo accidit incenso nemore
47 Pyrrhaeo. alia etiamnunc generibus ipsis in sexu differentia; mas brevior et durior ⟨foliis⟩[2], femina procerior, pinguioribus foliis et simplicibus atque non rigentibus; lignum maribus durum et in fabrili opere contortum, feminae mollius, publico discrimine in securibus: hae in quocumque genere deprehendunt marem, quippe respuuntur et fragosius sidunt, aegrius revelluntur. ipsa materies retorrida
48 et nigrior maribus. laricis circa Idam in Troade et alia differentia, montanae maritimaeque. nam in Macedonia et Arcadia circaque Elim permutant nomina, nec constat auctoribus quod cuique generi adtribuant; nos ista Romano discernimus iudicio.

Abies e cunctis amplissima est et femina etiam prolixior, materie mollior utiliorque, arbore rotundior, folio pinnato densa ut imbres non tramittat, atque
49 hilarior in totum. e ramis generum horum pani-

[1] *Hermolaus e Theophr.*
[2] *Edd. e Theophr.*

of the pitch-pine is scantier and also drier and thinner and of a colder nature, and the whole tree is rougher and is covered with resin; the wood more resembles that of the fir. When the roots of a larch have been burnt it does not throw out fresh shoots, but the pitch-pine does, as happened on the island of Lesbos after the grove of the town of Pyrrha had been burnt. Moreover there is another difference within these species themselves in the matter of sex: the male tree is shorter and has harder leaves, while the female is taller and its leaves are more unctuous and not forked and not stiff; and the wood of the male is hard, and when used in carpentry splits crooked, while that of the female is softer, the manifestation of the difference resting with the axe, which in every variety detects the male, because it meets with resistance and falls with a louder crash and is pulled out of the wood with greater difficulty. With the male trees the wood itself is parched and blacker in colour. In the neighbourhood of Mount Ida in the Troad there is also another variation among the larches, the mountain larch and the coast larch being different. As for Macedonia and Arcadia and the neighbourhood of Elis, in these places the varieties exchange names and the authorities are not agreed as to which name to give to each species, though for our part we settle that sort of question by the verdict of Rome.

The biggest of the entire group is the fir, the female being even taller than the male, and its timber softer and more easily worked, and the tree rounder in shape, and with dense feathery foliage, which makes it impervious to rain; and in general it has a more cheerful appearance. From the branches of these *The fir.*

cularum modo nucamenta squamatim compacta dependent praeterquam larici. haec abietis masculae primori parte nucleos habent, non item feminae; piceae vero totis paniculis, minoribus gracilioribusque, minimos ac nigros, propter quod Graeci phthirophoron[1] eam appellant. in eadem nucamenta maribus conpressiora sunt ac minus resina roscida.

50 XX. Similis his etiamnunc aspectu est, ne quid praetereatur, taxus minime virens gracilisque et tristis ac dira, nullo suco, ex omnibus sola bacifera. mas noxio fructu, letale quippe bacis in Hispania praecipue venenum inest: vasa etiam viatoria ex ea vinis
51 in Gallia facta mortifera fuisse conpertum est. hanc Sextius milacem a Graecis vocari dicit, et esse in Arcadia tam praesentis veneni ut qui obdormiant sub ea cibumve capiant moriantur. sunt qui et taxica hinc appellata dicant venena quae nunc toxica dicimus, quibus sagittae tinguantur. reperio[2] innoxiam fieri si in ipsam arborem clavus aereus adigatur.

52 XXI. Pix liquida in Europa e taeda coquitur, navalibus muniendis multosque alios ad usus. lignum eius concisum furnis undique igni extra circumdato fervet. primus sudor aquae modo fluit canali; hoc in Syria cedrium vocatur, cui tanta vis est ut in Aegypto

[1] *Benedictus* (phthiropoeon *Mayhoff*): phthiroporon.
[2] reperio? *Mayhoff*: reperto.

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[a] *Taxica* from *taxus*, a yew; *toxica* from τόξον, a bow.

species, with the exception of the larch, there hang nut-like growths resembling catkins, packed together like scales. Those of the male fir have kernels in their tips, though this is not the case with the female fir; but the nuts of the pitch-pine have kernels filling the whole of the catkins, which are smaller and narrower, the kernels being very small and black, owing to which the Greek name for the pitch-pine is a word meaning 'louse-tree.' Also in the pitch-pine the nut-growths are more closely packed in the male trees and less moist with resin.

The yew

XX. Moreover, not to pass over any variety, resembling these trees in appearance is the yew, hardly green at all in colour and slender in form, with a gloomy, terrifying appearance; it has no sap, and is the only tree of all the class that bears berries. The fruit of the male yew is harmful—in fact its berries, particularly in Spain, contain a deadly poison; even wine-flasks for travellers made of its wood in Gaul are known to have caused death. Sextius says that the Greek name for this tree is *milax*, and that in Arcadia its poison is so active that people who go to sleep or picnic beneath a yew-tree die. Some people also say that this is why poisons were called 'taxic,' which we now pronounce 'toxic',[a] meaning 'used for poisoning arrows.' I find it stated that a yew becomes harmless if a copper nail is driven into the actual tree.

Production and uses of tar.

XXI. In Europe tar is obtained from the torch-pine by heating it, and is used for coating ships' tackle and many other purposes. The wood of the tree is chopped up and put into ovens and heated by means of a fire packed all round outside. The first liquid that exudes flows like water down a pipe; in Syria this is called 'cedar-juice,' and it is so strong that in Egypt

corpora hominum defunctorum perfusa eo serventur.

53 XXII. sequens liquor crassior iam picem fundit; haec rursus in cortinas aereas coniecta aceto spissatur ut coagulo et Bruttiae cognomen accepit, doliis dumtaxat vasisque ceteris utilis, lentore ab alia pice differens, item colore rutilante et quod pinguior est reliqua omni illa. fit e picea resina ferventibus cocta[1] lapidibus in alveis validi roboris aut, si alvei non sint,
54 struis congerie, velut in carbonis usu. haec in vinum additur farinae modo tusa, nigrior colore. eadem resina si cum aqua lenius[2] decoquatur coleturque, rufo colore lentescit ac stillaticia vocatur. seponuntur autem ad id fere vitia resinae cortexque. alia temperies ad crapulam: namque flos crudus resinae cum multa astula tenui brevique avulsus conciditur ad cribrum minuta; dein ferventi aqua
55 donec coquatur[3] perfunditur. huius expressum pingue praecipua resina fit atque rara nec nisi paucis in locis subalpinae Italiae, conveniens medicis: resinae albae congium in duobis[4] aquae pluviae cocunt; alii utilius putant sine aqua coquere lento igne toto die, utique vase aeris albi, item terebinthinam in sartagine cinere ferventi, hanc ceteris praeferentes. proxima ex lentisco.

[1] cocta? *Mayhoff*: coacta.
[2] *Mayhoff*: levius.
[3] cogatur *coll.* § 53 *Ian.*
[4] in II (*nonne* binis?) *Mayhoff*.

it is used for embalming the bodies of the dead. XXII. The liquor that follows is thicker, and now produces pitch; this in its turn is collected in copper cauldrons and thickened by means of vinegar, as making it coagulate, and it has been given the name of Bruttian pitch; it is only useful for casks and similar receptacles, and differs from other pitch by its viscosity and also by its reddish colour and because it is greasier than all the rest. It is made from pitch-resin caused to boil by means of red-hot stones in casks made of strong oak, or, if casks are not available, by piling up a heap of billets, as in the process of making charcoal. It is this pitch which is used for seasoning wine after being beaten up into a powder like flour, when it has a rather black colour. The same resin, if rather gently boiled with water and strained off, becomes viscous and turns a reddish colour; this is called 'distilled pitch.' For making this the inferior parts of the resin and the bark of the tree are usually set aside. Another mixing process produced 'intoxication resin': raw flower of resin is picked off the tree with a quantity of thin, short chips of the wood, and broken up small in a sieve, and then steeped in water heated to boiling. The grease of this that is extracted makes the best quality of resin, and it is rarely obtainable, and only in a few districts of Italy near the Alps. It is suitable for medical use: the doctors boil $\frac{3}{4}$ of a gallon of white resin in $1\frac{1}{2}$ gallons of rain-water—though others think it pays better to boil it without water over a slow fire for a whole day, and to employ a vessel of white copper, or to boil resin from the turpentine-tree in a flat pan on hot ashes, as they prefer this to all the other kinds. The resin of the mastich is rated next.

56 XXIII. Non omittendum apud eosdem zopissam vocari derasam navibus maritimis picem cum cera, nihil non experiente vita, multoque efficaciorem ad omnia quibus pices resinaeque prosunt, videlicet adiecto salis callo.

57 Aperitur picea e parte solari, non plaga sed volnere ablati corticis, cum plurimum bipedali hiatu, ut a terra cubito cum minimum absit. nec corpori ipsi parcitur ut in ceteris, quoniam astula in fructu est; verum haec proxima laudatur, altior amaritudinem adfert. postea umor omnis e tota confluit in ulcus,
58 item in taeda. cum id manare desiit, simili modo ex alia parte aperitur ac deinde alia. postea tota arbor succiditur et medulla eius uritur. sic et in Syria terebintho detrahunt cortices, ibi quidem et e ramis ac radicibus, cum resina damnetur ex his partibus. in Macedonia laricem masculam totam[1]
59 urunt, feminae radices tantum. Theopompus scripsit in Apolloniatarum agro picem fossilem non deteriorem Macedonica inveniri. pix optima ubique ex apricis

[1] totam *add. Rackham.*

XXIII. We must not omit to state that with the Greeks also the name of 'live pitch' is given to pitch which has been scraped off the bottom of sea-going ships and mixed with wax—as life leaves nothing untried—and which is much more efficacious for all the purposes for which the pitches and resins are serviceable, this being because of the additional hardness of the sea salt. *Use of pitch from hulls of ships.*

An opening is made in a pitch-tree on the side towards the sun, not by means of an incision but by a wound made by removing the bark, making an aperture at most two feet long, so as to be at least eighteen inches from the ground. Also the body of the tree itself is not spared, as in other cases, because the chips of wood are valuable; but the chips from nearest the surface are most esteemed, those from deeper in giving the resin a bitter flavour. Afterwards all the moisture from the whole tree flows together into the wound; and so also in the case of the torch-tree. When the liquid stops flowing, an opening is made in a similar manner out of another part of the tree and then another. Afterwards the whole tree is felled and the pith of the timber is burnt. In the same way in Syria also they strip the bark off the turpentine-tree, there indeed stripping it from the branches and roots as well, although the resin from these parts is not valued highly. In Macedonia they burn the whole of the male larch but only the roots of the female tree. Theopompus wrote that in the territory of the Apolloniates a mineral pitch is found that is not inferior to that of Macedonia. The best pitch is everywhere obtained from trees growing in sunny places with a north-east aspect, whereas that from *Ways of getting pitch.*

aquilonis situ, ex opacis horridior virusque praeferens, frigida hieme deterior ac minus copiosa et decolor.

60 quidam arbitrantur in montuosis copia praestantiorem ac colore et dulciorem fieri, odorem quoque gratiorem, dum resina sit, decoctam autem minus picis reddere, quoniam in serum[1] abeat, tenuioresque esse ipsas arbores quam in planis, sed has et illas serenitate steriliores. fructum quaedam proxumo anno ab incisu largiuntur, aliae secundo, quaedam tertio. expletur autem plaga resina, non cortice nec cicatrice, quae in hac arbore non coit.

61 Inter haec genera propriam quidam fecere sappinum, quoniam ex cognatione harum seritur qualis dicta est in nucleis; eiusdemque arboris imas partes taedas vocant, cum sit illa arbor nil aliud quam picea feritatis paulum mitigatae satu, sappinus autem materies caesurae genere fiat, sicuti docebimus.

62 XXIV. Materiae enim causa reliquas arbores natura genuit copiosissimamque fraxinum. procera haec ac teres, pinnata et ipsa folio, multumque Homeri praeconio et Achillis hasta nobilitata. materies est ad

[1] *V.l.* ferum.

Il. XX. 277 Πηλιάς . . . μελίη.

shady places has a rougher appearance, and presents an offensive odour; and pitch in a cold winter is inferior in quality and less plentiful in quantity, and of a bad colour. Some people think that the liquid obtained in mountain regions is superior in quantity and colour and sweeter, and also has a more agreeable smell, so long as it remains in the state of resin, but that when boiled down it yields less pitch, because it goes off into a watery residue, and that the trees themselves are thinner than those in the plains, but that both the one and the other kinds are less productive in dry weather. Some trees yield a liberal supply in the year after they are cut, whereas others do so a year later and some two years later. The wound fills up with resin, not with bark or by a scab, as in this tree an incision in the bark does not join up.

Among these classes of trees some people have made a special variety of the sappinus fir, because under the name of this group of trees is grown the kind which we described among the nut-bearing xv. 36.
kinds; and the lowest parts of the same tree are called pine-torches, although the tree in question is really only a pitch-pine with its wild character a little modified by cultivation, whereas the sappinus is a timber produced by the mode of felling used, as we shall explain. § 196.

XXIV. For it is for the sake of their timber that Nature has created the rest of the trees, and the most productive of them all, the ash. This is a lofty, shapely tree, itself also having feathery foliage, and has been rendered extremely famous by the advertisement given it by Homer [a] as supplying the spear of Achilles. The wood of the ash is useful

The ash: varieties, localities and uses.

plurima utilis. ea quidem quae fit in Ida Troadis in tantum cedro similis ut ementes fallat cortice ablato.
63 Graeci duo genera eius fecere: longam enodem, alteram brevem duriorem fuscioremque, laureis foliis. bumeliam vocant in Macedonia amplissimam lentissimamque. alii situ divisere, campestrem enim esse
64 crispam, montanam spissam. folia earum iumentis mortifera, ceteris ruminantium innocua Graeci prodidere; in Italia nec iumentis nocent. contra serpentes vero suco expresso ad potum et imposita ulceri opifera ut [1] nihil aeque reperiuntur; tantaque est vis ut ne matutinas quidem occidentesve umbras, cum sunt longissimae, serpens arboris eius adtingat, adeo ipsam procul fugiat. experti prodimus, si fronde ea circumcludantur [2] ignis et [3] serpens, in ignes potius quam in fraxinum fugere serpentem. mira naturae benignitas prius quam hae prodeant florere fraxinum nec ante conditas folia demittere.

65 XXV. In tilia mas et femina differunt omni modo. namque et materies maris dura rufiorque ac nodosa et odoratior, cortex quoque crassior ac detractus in-

[1] *Mayhoff*: ac.
[2] *Mayhoff*: circumcludatur.
[3] -datur et igni *Detlefsen*.

for a great many purposes. The kind grown on Ida in the Troad so closely resembles cedar-wood that when the bark has been removed it deceives buyers. The Greeks have distinguished two kinds of ash-tree, a tall one without knots and the other a short tree with harder and darker wood and foliage like that of the bay-tree. In Macedonia there is a very large ash making very flexible timber, which has the Greek name of 'ox-ash.' Other people have distinguished the ash-tree by locality, as they say that the ash of the plains has a crinkly grain and the mountain ash is close-grained. Greek writers have stated that the leaves of the ash are poisonous to beasts of burden, though doing no harm to all the other kinds of ruminants; but in Italy they are harmless to beasts of burden also. Indeed, they are found to be serviceable as an exceptionally effective antidote for snake-bites, if the juice is squeezed out to make a potion and the leaves are applied to the wound as a poultice; and they are so potent that a snake will not come in contact with the shadow of the tree even in the morning or at sunset when it is at its longest, so wide a berth does it give to the tree itself. We can state from actual experiment that if a ring of ash-leaves is put round a fire and a snake, the snake will rather escape into the fire than into the ash-leaves. By a marvellous provision of Nature's kindness the ash flowers before the snakes come out and does not shed its leaves before they have gone into hibernation.

XXV. In the lime-tree the male and the female are entirely different. Not only is the wood of the male lime hard and reddish and knotted and more scented, but also the bark is thicker, and when *The lime.*

flexibilis; nec semen fert aut florem ut femina, quae crassior arbore, materie candida praecellensque est. mirum in hac arbore fructum a nullo animalium adtingi, foliorum corticisque sucum esse dulcem. inter corticem ac lignum tenues tunicae sunt[1] multiplici membrana, e quibus vincula tiliae vocantur tenuissimumque eorum[2] philyrae, coronarum lemniscis celebres antiquorum honore. materies teredinem non sentit, proceritate perquam modica, verum utilis.

66 XXVI. Acer eiusdem fere amplitudinis, operum elegantia ac subtilitate citro secundum. plura eius genera: album, quod praecipui candoris, vocatur Gallicum in transpadana Italia transque Alpes nascens; alterum genus crispo macularum discursu, qui cum excellentior fuit, a similitudine caudae pavonum nomen accepit, in Histria Raetiaque praecipuum; e viliore genere crassivenium vocatur.
67 Graeci situ discernunt, campestre enim candidum esse nec crispum—quod glinon vocant—montanum vero crispius duriusque, etiamnunc e mascula crispius ad lautiora opera, tertium genus zygian rubentem, fissili ligno, cortice livido,[3] scabro. hoc

[1] *Detlefsen*: tunicas.
[2] *Mayhoff*: tenuissimum quorum.
[3] *Mayhoff*: livido de (l. ac *Detlefsen*).

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[a] Used for well-ropes and for binding sheaves.
[b] *Acer pavonaceum*.

peeled off cannot be bent; nor does the male tree produce seed or a flower as the female does, and the female is thicker in the trunk and its wood is white and of superior quality. A remarkable fact in regard to the lime is that no animal will touch its fruit, whereas the juice of the leaves and bark has a sweet taste. Between the bark and the wood there are thin coats made by a number of layers of skin, made from which are the ropes called lime-withies,[a] and the thinnest part of them provided lime-chaplets, famous for the ribbons of wreaths of honour in old times. Lime-wood is worm-proof, and it makes useful timber although the tree is of extremely moderate height.

The maple: varieties and distribution.

XXVI. The maple, which is of about the same size as the lime, is second only to the citrus in its elegance as a material for cabinet-making and in the finish it allows of. It is of several kinds: the white maple, an exceptionally light-coloured wood, is called Gallic maple, and grows in Italy north of the Po, and on the other side of the Alps; the second kind has blotches running in wavy lines, and in its finer variety has received the name[b] of 'peacock maple' from its resemblance to a peacock's tail, the finest sorts growing in Istria and Tyrol; and an inferior variety is called the thick-veined maple. The Greeks distinguish the varieties by locality, saying that the maple of the plains is light-coloured and not wavy—this kind they call glinon—but the mountain maple has a rather wavy grain and is harder, the wood of the male tree being still wavier and suitable for making more elegant articles; while a third kind is the hornbeam, a reddish wood that splits easily, with a rough bark of a pale colour.

alii generis proprii esse malunt et Latine carpinum appellant.

68 XXVII. Pulcherrimum vero est bruscum, multoque excellentius etiamnum molluscum; tuber utrumque arboris eius, bruscum intortius crispum, molluscum simplicius sparsum, et si magnitudinem mensarum caperet, haut dubie praeferretur citro; nunc intra pugillares lectorumque silicios[1] †[aut lamnas][2] raro usu spectatur. e brusco fiunt et mensae, sed[3]
69 nigrescentes. reperitur et in alno tuber, set[4] tanto deterius quantum ab acere alnus ipsa distat. aceris mares prius florent. etiamnunc in siccis nata[5] praeferuntur aquaticis, sicut et fraxini. est trans Alpes arbor simillima aceri albo materie quae vocatur staphylodendron: fert siliquas et in iis nucleos sapore nucis abellanae.

70 XXVIII. In primis vero materies honorata buxo est raro crispanti nec nisi radice, de cetero levi, cuius materia est lentitie quadam[6] et duritie ac pallore commendabilis, ipsa vero arbor et[7] topiario opere. tria eius genera: Gallicum, quod in metas emittitur amplitudinemque proceriorem; oleastrum in omni usu damnatum gravem praefert odorem; tertium genus nostras vocant e silvestri, ut credo, mitigatum satu,

[1] *Mendum Rackham*: *v.ll.* sublicios, solicios (solidos *Salmasius*).
[2] *Gloss. secl. Rackham.*
[3] sed *add.* ? *Mayhoff.*
[4] ? *an*: tubere *aut* tuber.
[5] *Rackham*: natae.
[6] levi . . . quadam *Detlefsen*: lenis quies materiae silentio quodam.
[7] *Mayhoff*: in ipsa vero arbore.

[a] The text is doubtful. If *lectorum* is genitive plural of *lector*, perhaps readers' reading-stands and book-rests are described.

Others prefer to class this as belonging to a special kind of tree, and give it the Latin name of carpinus.

XXVII. But a very beautiful feature of the maple is the growth on it called bruscum, and yet much more remarkable the molluscum, both knots, the former veined in a twistier pattern, while the latter is covered with simpler markings, and if it were large enough for tables to be made of it would undoubtedly be preferred to citrus-wood; but as it is, except for writing-tablets and veneering on couches,[a] it is seldom seen in use. Bruscum is also used for making tables, though they have a darkish colour. A similar growth is also found on the alder, but it is as far inferior to the others as the alder itself is to the maple. The male maple flowers before the female. It must be added that maples grown in dry places are preferred to those in marshes, as is also the case with ash-trees. North of the Alps grows a tree [b] making timber that closely resembles the white ash; its Greek name is the cluster-tree, as it bears pods containing kernels, which taste like a hazel nut.

XXVIII. But a timber rated in the first rank is that of the box, which is rarely marked with wrinkles and only at the root, the rest of it being smooth; box-wood is esteemed for a certain toughness and hardness and for its pale colour, while the tree itself is valued in ornamental gardening. There are three kinds: the Gallic box, which is trained to shoot up into conical pillars and attains a rather large height; the oleaster, which is condemned for all purposes, and which gives out an unpleasant smell; and a third kind called our native box, a cultivated variety *The box.*

[b] The wild pistachio.

diffusius et densitate parietum, virens semper ac
71 tonsile. buxus Pyrenaeis ac Cytoriis montibus plurima et Berecyntio tractu, crassissima in Corsica, flore[1] spernendo, quae causa amaritudinis mellis; semen cunctis animantibus invisum. nec in Olympo Macedoniae gracilior, sed brevis. amat frigida, aspera;[2] in igni quoque duritia quae ferro, nec flamma nec carbone utili.

72 XXIX. Inter has atque frugiferas materie vitiumque amicitia accipitur ulmus. Graeci duo genera eius novere: montanam[3] quae sit amplior, campestrem quae fruticosa. Italia Atinias vocat excelsissimas (et ex is siccaneas praefert quae non sint riguae), alterum genus Gallicas, tertium nostrates, densiore folio et ab eodem pediculo numerosiore, quartum silvestre. Atiniae non ferunt samaram—ita vocatur ulmi semen—omnesque radicum plantis proveniunt, reliquae et[4] semine.

73 XXX. Nunc celeberrimis arborum dictis quaedam in universum de cunctis indicanda sunt. montes amant cedrus, larix, taeda et ceterae e quibus resina gignitur, item aquifolia, buxus, ilex, iuniperus, te-

[1] *Warmington*: flore non.
[2] aspera? *Mayhoff*: aprica.
[3] *Mayhoff*: montuosam.
[4] et *add. Rackham*.

[a] The elm ranges with the timber trees because it supplies timber and with the fruit-trees because vines are grown on it as a trellis.

[b] In habit, not in size.

[c] The meaning is suckers growing from the roots of a tree, which are detached and planted to grow into another tree.

as I believe of the wild box, which spreads more than the others and forms a thick hedge; it is an evergreen, and will stand clipping. The box abounds in the Pyrenees and the Kidros mountains and in the Berecyntus district, and it grows thickest in Corsica, where it bears an objectionable blossom, which causes the bitter taste in Corsican honey; its seed arouses the aversion of all living creatures. The box on Mount Olympus in Macedonia makes as thick a growth as the Corsican, but it is of a low height. Box loves cold and rugged places; also in a fire it is as hard as iron, and is of no use for fuel or charcoal.

The elm.

XXIX. Among these and the fruit-bearing trees a place is given to the elm, because of its timber and the friendship between it and the vine.[a] The Greeks are acquainted with two kinds of elm: the mountain elm which makes the larger growth, and the elm of the plains which grows like a shrub.[b] Italy gives the name of Atinian elm to a very lofty kind (and among these values highest the dry variety, which will not grow in damp places); a second kind it calls the Gallic elm, a third, which has thicker foliage and more leaves growing from the same stalk, the Italian elm, and a fourth, the wild elm. The Atinian elm does not bear samara—that is the name for elm seed —and all the elms are grown from shoots of the roots,[c] but the other kinds also from seed.

Distribution of various trees.

XXX. The most notable trees having now been mentioned, some general facts must be pointed out concerning all trees. The cedar, the larch, the torch-pine and the rest of the trees that produce resin love mountains, and so also do the holly, box, holm-oak, juniper, turpentine-tree, poplar, mountain ash

rebinthus, populus, ornus, carpinus; est in Appennino et frutex qui vocatur cotinus, ad linamenta
74 modo conchylii colore insignis. montes et valles diligunt[1] abies, robur, castaneae, tilia, ilex, cornus. aquosis montibus gaudent acer, fraxinus, sorbus, tilia, cerasus. non temere in montibus visae sunt prunus, punicae, oleastri, iuglans, mori, sabuci; descendunt et in plana cornus, corylus, quercus, ornus, acer, fraxinus, fagus, carpinus; subeunt et in montuosa ulmus, malus, pirus, laurus, myrtus, sanguinei frutices ilex tinguendisque vestibus nascentis genistae. gaudet frigidis sorbus, sed magis etiam betulla.
75 Gallica haec arbor mirabili candore atque tenuitate, terribilis magistratuum virgis, eadem circulis flexilis, item corbium costis; bitumen ex ea Galli excoquunt. in eosdem situs comitantur et spina, nuptiarum facibus auspicatissima, quoniam inde fecerint pastores qui rapuerunt Sabinas, ut auctor est Masurius; nunc facibus carpinus, corylus familiarissimae.

76 XXXI. Aquas odere cupressi, iuglandes, castaneae, laburnum. Alpina et haec arbor, nec vulgo nota, dura ac candida materie, cuius florem cubitalem longitudine apes non adtingunt. odit et quae appellatur Iovis barba, in opere topiario tonsilis et in rotunditatem

[1] *Rackham*: diligit.

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[a] *Rhus cotinus.*

and hornbeam; on the Apennines there is also a shrub called the cotinus,[a] famous for supplying a dye for linen cloth that resembles purple. The fir, hard-oak, chestnuts, lime, holm-oak and cornel like mountains and valleys. The maple, ash, service-tree, lime and cherry love mountains watered by springs. The plum, pomegranate, wild olive, walnut, mulberry and elder-trees are not generally found on mountains; and the cornel cherry, hazel, oak, mountain ash, maple, ash, beech, hornbeam come down from the mountains to level ground also, while the elm, apple, pear, bay, myrtle, red cornel, holm-oak and the broom, designed by Nature for dyeing cloth, spread up from the plains to mountain regions as well. The service-tree delights in cold places, but even more the birch. The latter is a Gallic tree, of a remarkable white colour and slenderness, a cause of terror as supplying the magistrates' rods of office; it is also easily bent to make hoops and likewise the ribs of small baskets, and the Gauls extract from it bitumen by boiling. These trees are accompanied into the same regions by the may also, the most auspicious tree for supplying wedding torches, because according to the account of Masurius it was used for that purpose by the shepherds who carried off the Sabine women; but at the present time the hornbeam and the hazel are most usually employed for torches.

Trees that dislike water.

XXXI. The cypress, walnut, chestnut and laburnum dislike water. The last is another Alpine tree, and is not generally known; its wood is hard and white and its flower, which is half a yard long, bees will not touch. The shrub called Jupiter's beard, used in ornamental gardening and clipped into a

77 spissa, argenteo folio. non nisi in aquosis proveniunt salices, alni, populi, siler, ligustra tesseris utilissima, item vaccinia Italiae in aucupiis sata, Galliae vero etiam purpurae tinguendae causa ad servitiorum vestes. quaecumque communia sunt montibus planisque, maiora fiunt et[1] aspectu pulchriora quae in campestribus, meliora autem fructu, materie crispiora quae[2] in montibus, exceptis malis pirisque.

78 XXXII. Praeterea arborum aliis decidunt folia, aliae sempiterna coma virent—quam differentiam antecedat necesse est prior; sunt enim arborum quaedam omnino silvestres, quaedam urbaniores, quoniam his placet nominibus distinguere: hae[3] mites, quae fructu aut alia[4] aliqua dote umbrarumque officio humanius iuvant, non improbe dicantur urbanae.

79 XXXIII. Harum generis[5] non decidunt[6] oleae, lauro, palmae, myrto, cupressis, pinis, hederae, rhododendro et, quamvis herba dicatur, sabinae. rhododendron, ut nomine apparet, a Graecis venit (alii nerium vocarunt, alii rhododaphnen); sempiternum fronde, rosae similitudine, caulibus fruticosum, iumentis caprisque et ovibus venenum est, idem homini contra serpentium venena remedio.

80 Silvestrium generis folia non decidunt abieti, larici, pinastro, iunipero, cedro, terebintho, buxo, ilici,

[1] et *add. Mayhoff.* [2] *Mayhoff*: crispioraque.
[3] ac *Mayhoff.* [4] alia *add. Rackham.*
[5] *Mayhoff*: generi.
[6] decidunt ⟨folia⟩? *Rackham.*

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[a] Brookwillow.
[b] The whortleberry does not in fact grow in damp places; but identification is uncertain. Nor does the privet confine itself to damp ground.
[c] Greek for 'rose-tree.'

round bushy shape, and having a silvery leaf, also dislikes water. Willows, alders, poplars, the siler [a] and the privet, the last extremely useful for making tallies, will only grow in places where there is water, and the same is the case with the whortleberry,[b] grown in bird-snares in Italy, but in Gaul also to supply purple dye for slaves' clothes. All the trees that are common to the mountains and the plains grow larger and finer to look at when in flat country, but those on the mountains grow better fruit and make timber with a wavier grain, excepting the apples and pears.

XXXII. Beside this, some trees shed their leaves but others are evergreen—although before this difference another one has to be mentioned first: some trees are entirely wild, but some being more civilized —as these are the accepted names by which they are distinguished: the latter, kindly trees which render more humane aid by their fruit or some other property and by affording shade, may not improperly be called 'civilized.' *Wild and cultivated trees.*

XXXIII. The trees of the latter class that do not shed their leaves are the olive, laurel, palm, myrtle, cypress, the pines, ivy, oleander and savin—though the last may be called a herbaceous plant. The oleander, as is shown by its name,[c] comes from the Greeks (another Greek name given it being nērion, and another 'rose-laurel'); it is an evergreen that resembles a rose-tree, and throws out shoots from the stems; it is poisonous for cattle and for goats and sheep, but for man it serves as an antidote against the poisons of snakes. *Evergreen trees.*

Trees of the forest class that do not shed their leaves are the fir, larch, wild pine, juniper, cedar,

aquifolio, suberi, taxo, tamarici. inter utraque genera sunt andrachle in Graecia et ubique unedo: reliqua enim folia decidunt iis praeterquam in cacuminibus. non decidunt autem et in fruticum genere
81 cedro [1] cuidam, rubo, calamo. in Thurino agro, ubi Sybaris fuit, ex ipsa urbe prospiciebatur quercus una numquam folia demittens nec ante mediam aestatem germinans; idque mirum est Graecis auctoribus proditum apud nos postea sileri. nam locorum tanta vis est ut circa Memphim Aegypti et in Elephantine Thebaidis nulli arborum decidant, ne vitibus quidem.

82 XXXIV. Ceterae omnes extra praedictas, etenim enumerare longum est, folia deperdunt; observatumque non arescere nisi tenuia et lata et mollia, quae vero non decidant callo crassa et angusta esse. falsa definitio est non decidere iis quarum pinguior sucus sit; quis enim potest in ilice intellegere? decidere Timaeus mathematicus sole scorpionem transeunte sideris vi et quodam veneno aeris putat; cur ergo non eadem causa adversum omnes polleat
83 iure miremur. cadunt plurimis autumno, quaedam amittunt tardius atque in hiemes prorogant moras;

[1] cedro *coll. Theophrasto add. Mayhoff.*

turpentine, box, holm-oak, holly, cork, yew, tamarisk. Between the evergreen and the deciduous classes are the andrachle growing in Greece and the arbutus in all countries, for they shed all their leaves except those on the top of the tree. In the class of shrubs also a kind of cedar, the bramble and the reed do not shed their leaves. In the territory of Thurii, where Sybaris once stood, there was a single oak that was visible from the actual city which never shed its leaves and which did not bud before midsummer; and it is surprising that this fact having been published by Greek authors has never subsequently been mentioned among ourselves. The fact is that the influence of some localities is so great that in the neighbourhood of Memphis in Egypt and at Elephantine in the Thebaid none of the trees shed their leaves, not even the vines.

Exceptional and local non-deciduous trees.

XXXIV. All the rest of the trees except those already mentioned—for it would be a lengthy business to enumerate them—shed their leaves; and it has been noticed that the leaves do not wither unless they are thin, broad and soft, whereas the leaves which do not fall off are thick and fleshy and narrow in shape. It is an erroneous classification to say that the trees which do not shed their leaves are those with a more unctuous juice; for who can detect that property in the case of the holm-oak? The mathematician Timaeus thinks that they fall when the sun is passing through Scorpio owing to the strength of that constellation and a certain poison in the air; but then we may justly wonder why the same influence is not operative against all these trees. Most trees shed their leaves in autumn, but some lose them later, and prolong the delay into the winter;

Deciduous trees.

neque interest maturius germinasse, utpote cum quaedam primae germinent et inter novissimas nudentur, ut amygdalae, fraxini, sabuci, morus autem novissima germinet, cum primis folia demittat.
84 magna et in hoc vis soli: prius decidunt in siccis macrisque, et vetustae prius arbori, multis etiam antequam maturescat fructus, ut serotinae fico et hibernae piro et malo, granatumque est pomum tantum aspici in matre. neque his autem quae semper retinent comas eadem folia durant subnascentibus aliis; tum arescunt vetera, quod evenit circa solstitia maxime.

85 XXXV. Foliorum unitas in suo cuique genere permanet, praeterquam populo, hederae, crotoni (quam et cici diximus vocari). populi tria genera, alba ac nigra et quae Libyca appellatur minima folio ac
86 nigerrima fungisque enascentibus laudatissima. alba folio bicolor, superne candicans inferiore parte viridi. huic nigraeque et crotoni in iuventa circinatae rotunditatis sunt, vetustiora in angulos exeunt; e contrario hederae angulosa rotundantur. populorum foliis grandissima lanugo evolat candida et radiata, folio numerosiore candicant ut[1] villi.[2] folia granatis et amygdalis rubentia.

[1] *Mayhoff*: candida et ut.
[2] *Edd.*: villae.

and it makes no difference if they budded earlier, inasmuch as some trees are the first to bud and among the last to be stripped of their leaves, for instance almonds, ash-trees, elders, whereas the mulberry is the latest to bud and one of the first to shed its leaves. The soil also has a great influence in this matter: the leaves fall earlier on dry, thin soils, and earlier with an old tree, in many cases even before the fruit can ripen, for instance, in the case of the late fig and the winter pear and apple, and with the pomegranate the fruit is the only thing visible on the parent tree. But not even with the trees that always keep their foliage do the same leaves last on with others shooting up beneath them—when this happens the old leaves wither away, this occurring mostly about the solstices.

XXXV. Each of the trees in its own kind has a permanent uniformity of leaf, with the exception of the poplar, the ivy and the croton (which, as we have said, is also called the cici). There are three kinds of poplars, the white, the black and the one called the Libyan poplar, which has a very small and very dark leaf and which is very famous for the mushrooms that grow on it. The white poplar has a leaf of two colours, white on the upper side and green underneath. With this tree and the black poplar and the croton the leaves are exactly circular when young but project into angles when older; whereas the leaves of the ivy are angular at first but become round. From the leaves of the white poplar springs out a quantity of shiny white down, and when the foliage is specially thick the trees are white all over like fleeces. Pomegranate and almond trees have reddish leaves.

Varieties of foliage.

XV. 24.

87 XXXVI. Mirum in primis id quod ulmo tiliaeque et oleae et populo albae et salici evenit: circumaguntur enim folia earum post solstitium, nec alio argu-
88 mento certius intellegitur sidus confectum. est et publica omnium foliorum in ipsis differentia: namque pars inferior a terra herbido viret colore, ab eadem leviora, nervos callumque et articulos in superiore habent parte, incisuras vero subter ut manus humana. oleae superne candidiora et minus levia, item hederae. sed omnium folia cotidie ad solem oscitant, ut[1] inferiores partes tepefieri volentia. superior pars omnium lanuginem quantulamcumque habet, quae in aliis gentium lana est.

89 XXXVII. In oriente funes validos e foliis palmae fieri dictum est, eosque in umore utiliores esse. et apud nos vero palmis a messe decerpuntur (ex his meliora quae sese non diviserint), siccantur sub tecto quaternis diebus, mox in sole expanduntur et noctibus relicta, donec candore inarescant, postea in opera finduntur.

90 XXXVIII. Latissima fico, viti, platano, angusta myrto, punicae,[2] oleae, capillata pino, cedro, aculeata aquifolio et ilicum generi—nam iuniperis spina pro folio est,—carnosa cupresso, tamarici, crassissima alno,

[1] ut *add. Rackham.*
[2] *Edd.*: punico.

XXXVI. An exceptionally remarkable thing occurs in the case of the elm, lime, olive, white poplar and willow: after midsummer their leaves turn right round, and no other indication shows with greater certainty that the season is finished. Also their leaves contain in themselves a variation that is common to all foliage: the under surface, towards the ground, is of a bright grass-green colour, and on the same side they are comparatively smooth, while on their upper part they have sinews and hard skin and articulations, but creases underneath like the human hand. The leaves of the olive are whiter and not so smooth on the upper side, and ivy-leaves the same. But the leaves of all trees open out every day towards the sun, as if intending their under side to be warmed. The upper side of all leaves has however small an amount of down upon it, which in some countries serves for wool. *Peculiarities of foliage.*

XXXVII. We have said that in the east palm-leaves are used for making strong ropes, and that these are made specially serviceable for use in water. Indeed with us also the leaves are plucked from the palms after harvest, the better ones being those that have no divisions in them, and are put to dry indoors for a period of four days and then spread out in the sun, being left out at night as well, until they dry a bright white colour, and afterwards they are split for use in manufacture. *Palm-leaves for rope-making.* XIII. 30.

XXXVIII. The fig, vine and plane have very broad leaves and the myrtle, pomegranate and olive narrow ones; those of the pine and cedar are like hairs, those of the holly and one kind of holm-oak prickly—indeed the juniper has a spine instead of a leaf. The leaves of the cypress and tamarisk are fleshy, those of the *Various structures and arrangements of leaves.*

longa harundini, salici, palmae et duplicia, circinata piro, mucronata malo, angulosa hederae, divisa platano, insecta pectinum modo piceae, abieti, sinuosa
91 toto ambitu robori, spinosa cute rubo. mordacia sunt quibusdam, ut urticis, pungentia pino, piceae, abieti, larici, cedro, aquifoliis, pediculo brevi oleae, ilici, longo vitibus, tremulo populis, et iisdem solis inter se crepitantia. iam et in pomo ipso mali quodam in genere parva mediis emicant folia, interim et gemina, praeterea aliis circa ramos, aliis et in cacumine ramorum, robori et in caudice ipso.
92 iam densa aut [1] rara semperque lata rariora. disposita myrto, concava buxo, inordinata pomis, plura eodem pediculo exeuntia malis pirisque; ramulosa ulmo et cytiso. quibus adicit Cato decidua [2] populea quernaque, animalibus iubens dari non perarida, bubus quidem et ficulnea ilignaque et hederacea; dantur et ex harundine ac lauru. decidunt sorbo

[1] *Mayhoff*: ac.
[2] *Gelen*: decidua ea.

alder extremely thick, those of the reed and willow are long and the leaves of the palm are also double; those of the pear rounded, those of the apple pointed, those of the ivy angular, those of the plane divided, those of the pitch-pine and fir separated like the teeth of a comb, those of the hard oak crinkly all round the edge, those of the bramble have a prickly skin. In some plants the leaves sting, for instance nettles; those of the pine, pitch-pine, fir, larch, cedar and the hollies are prickly; those of the olive and holm-oak have a short stalk, those of the vine a long one, those of the poplar a stalk that quivers, and poplars are the only trees on which the leaves rustle against one another. Again, in one kind of the apple class there are small leaves even on the fruit itself, shooting out from the middle of the apples, sometimes even pairs of leaves; and moreover with some trees the leaves shoot round the boughs, but with others also at the tip of the boughs, and with the hard oak also on the trunk. Also leaves grow either dense or thinly spread, and broad leaves are always scantier. In the case of the myrtle they are arranged regularly, with the box they curve over, on fruit trees they have no arrangement, on the apple and the pear several shoot from the same stalk; the leaves of the elm and the cytisus are covered with branching veins. With these Cato *R.R.* v, xxx. includes the leaves of the poplar and oak when they have fallen, advising that they should be given to animals before they have become quite dry, and indeed that the leaves of the fig and holm-oak and also ivy-leaves should be fed to oxen; they are also given the leaves of the reed and the laurel. The service-tree sheds its leaves all at once, but all the

universa, ceteris paulatim.—Et de foliis hactenus.

93 XXXIX. Ordo autem naturae annuus ita se habet: primus est conceptus flare incipiente vento favonio, ex a. d. fere VI idus Febr. hoc maritantur vivescentia e terra, quippe cum etiam equae in Hispania, ut diximus: hic est genitalis spiritus mundi a fovendo dictus, ut quidam existimavere. flat ab
94 occasu aequinoctiali ver inchoans. catlitionem[1] rustici vocant, gestiente natura semina accipere; eaque animam ferente omnibus satis concipiunt variis diebus et pro sua quaeque natura, alia protinus, ut animalia, tardius aliqua et diutius gravida partus gerunt, quod germinatio ideo vocatur. pariunt vero cum florent, flosque ille ruptis constat utriculis; educatio in pomo est.

95 Haec[2] et germinatio labor arborum;[3] XL. flos est pleni veris indicium et anni renascentis, flos gaudium arborum: tunc se novas aliasque quam sunt ostendunt, tunc variis colorum picturis in certamen usque luxuriant. sed hoc negatum plerisque; non enim omnes florent, et sunt tristes quaedam quaeque non sentiant gaudia annorum; nam neque ilex, picea,

[1] catulitionem *Caesarius, sed stet rustica locutio.*
[2] *Mayhoff*: hoc.
[3] *Salmasius*: germinatio laborum.

other trees lose them gradually.—And so much on the subject of leaves.

XXXIX. The following is the order which Nature observes throughout the year. First comes fertilization, taking place when the west wind begins to blow, which is generally from February the 8th. This wind impregnates the creatures that derive life from the earth—indeed in Spain even the mares, as we have stated: this is the generating breath of the universe, its name *Favonius* being derived, as some have supposed, from *fovere*, 'to foster.' It blows from due west and marks the beginning of spring. Country people call it the cubbing season, as Nature is longing to receive the seeds; and when she brings life to all the seeds sown, they conceive in a varying number of days and each according to its nature, some immediately, as is the case with animals, while some do so more slowly and carry their progeny for a longer period of gestation, and the process is consequently called 'germination.' When a plant flowers it may be said to give birth, and the flower produced makes its appearance by bursting the capsules; the process of its upbringing takes place in the fruit stage.

The annual process of budding.

VIII. 166.

This and the process of budding are the trees' labour; XL. the blossom is the token of full spring and of the rebirth of the year—the blossom is the trees' rejoicing: it is then that they show themselves new creatures and transformed from what they really are, it is then that they quite revel in rivalling each other with the varied hues of their colouring. But to many of them this is denied, for they do not all blossom, and some of them are sombre and incapable of enjoying the delights of the seasons; the holm-

Non-flowering trees.

larix, pinus ullo flore exhilarantur natalesve pomorum annuos versicolori nuntio promittunt, nec fici atque caprifici, protinus enim fructum pro flore gignunt: in ficis mirabiles sunt et abortus qui numquam
96 maturescunt. nec iuniperi florent: quidam earum duo genera tradunt: alteram florere nec ferre, quae vero non floreat ferre protinus bacis nascentibus quae biennio haereant; sed id falsum, omnibusque his dura facies semper. sic et hominum multis fortuna sine flore est.

97 XLI. Omnes autem germinant, etiam quae non florent. magna et locorum differentia, quippe cum ex eodem genere quae sunt in palustribus priora germinent, mox campestria, novissima in silvis; per se autem tardius piri silvestres quam ceterae,[1] primo favonio cornus, proxime laurus pauloque ante aequinoctium tilia, acer, inter primas vero populus, ulmus, salix,
98 alnus, nuces; festinat et platanus. ceterae [2] vere coepturo, aquifolium, terebinthus, paliurus, castanea, glandes, serotino autem germine malus, tardissimo suber. quibusdam geminatur germinatio nimia soli ubertate aut invitante caeli voluptate, quod magis in

[1] *Urlichs*: cetera.
[2] *Edd.*: cetera.

oak, the pitch-pine, the larch and the pine do not bedeck themselves with any blossom or announce the yearly birthdays of their fruit by a many-coloured harbinger, nor yet do the cultivated and the wild fig, for they produce their fruit straight away instead of a blossom, and in the case of the fig it is also remarkable that there are abortive fruits that never ripen. The juniper also does not blossom—though some writers record two kinds of juniper, one of which flowers but does not bear, and one which does not flower but does bear, its berries coming to birth immediately, which remain on the tree for two years; but this is a mistake, and all the junipers present the same gloomy aspect always. Similarly, the fortunes of many human beings also lack a flowering season.

Various dates of budding.

XLI. All trees however produce buds, even those which do not blossom. There is also a great difference between localities, inasmuch as of the same kind of tree those growing in marshy places bud earlier, those on the plains next and those in woods last of all; but taking them separately the wild pear buds earlier than the rest, the cornel buds when the west wind begins to blow, next the laurel, and a little before the equinox the lime and maple—while among the earliest trees to flower are the poplar, elm, willow, alder and the nuts; the plane also buds quickly. The other trees bud when spring is about to begin, the holly, terebinth, Christ's thorn, chestnut and the acorn-bearing trees, while the apple is a late budder, and the cork buds latest of all. Some trees bud twice, owing to excessive fertility of soil or the allurement of agreeable weather, and this occurs to a greater degree with the young blades of cereals,

Later buddings.

herbis segetum evenit, in arboribus tamen nimia
99 germinatio elactescit; sunt aliae naturales quibusdam praeterque vernam, quae suis constant sideribus (quorum ratio aptius reddetur tertio ab hoc volumine) —hiberna aquilae exortu, aestiva canis ortu, tertia arcturi. has duas quidam omnibus arboribus communes putant, sentiri autem maxime in fico, vite, punicis, causam adferentes quoniam in Thessalia Macedoniaque plurima tum ficus exeat; maxime ta-
100 men in Aegypto apparet haec ratio. et reliquae quidem arbores, ut primum coepere, continuant germinationem, robur et abies et larix intermittunt tripertito ac terna germina edunt; ideo et ter squamas corticum spargunt, quod omnibus arboribus in germinatione evenit quoniam praegnatium rumpitur cortex. est autem prima earum incipiente vere circiter xv diebus, iterum germinant transeunte geminos sole; sic fit ut prima cacumina inpelli
101 secutis[1] appareat, geniculato incremento. tertia est earundem a solstitio brevissima, nec diutius septenis diebus; clareque et tunc cernitur excrescentium cacuminum articulatio. vitis sola bis parturit, primum cum emittit uvam, iterum cum

[1] secundis *Urlichs*.

although in trees excessive budding tends to exhaust the sap; but some trees have other buddings by nature, in addition to that which takes place in spring, these being settled by their own constellations (an account of which will be given more appropriately in the next volume but one after this)—a winter XVIII. 201 ff. budding at the rising of Aquila, a summer one at the rising of the Dog-star and a third at the rising of Arcturus. Some people think that the two latter buddings are common to all trees, but that they are most noticeable in the fig, the vine and the pomegranate; and they explain this as due to the fact that those are the times when there is the most abundant crop of figs in Thessaly and Macedonia; although this explanation holds good most clearly in Egypt. Also whereas the rest of the trees, as soon as they have begun to bud, keep on budding continuously, the hard-oak, the fir and the larch divide the process into three parts and produce their buds in three batches; consequently they also shed scales of bark three times, a process which occurs in all trees during germination because the bark of the pregnant tree is burst open. But their first budding is at the beginning of spring and takes about a fortnight, while they bud for the second time when the sun is passing through the Twins, with the consequence that the first shoots are seen to be pushed up by those that follow, the growth being attached by a joint. The third budding period of the same trees, which starts from midsummer, is the shortest, and does not take more than a week; and on this occasion also the jointing on the tips as they grow out is clearly visible. Only the vine buds twice, first when it puts forth a cluster and then

digerit. eorum quae non florent partus tantum est et
102 maturitas. quaedam statim in germinatione florent, properantque in eo sed tarde maturescunt, ut vitis; serotino quaedam germinatu[1] florent maturantque celeriter, sicuti morus quae novissima urbanarum germinat nec nisi exacto frigore, ob id dicta sapientissima arborum; sed cum coepit, in tantum universa germinatio erumpit ut una nocte peragatur etiam cum strepitu.

103 XLII. Ex iis quae hieme aquila exoriente, ut diximus, concipiunt floret prima omnium amygdala mense Ianuario, Martio vero pomum maturat. ab ea proximae florent Armeniaca, dein tuberes et praecoces, illae peregrinae ac[2] coactae; ordine autem naturae silvestrium primae sabucus cui medulla plurima et cui nulla cornus mascula, urbanarum malus parvoque post, ut simul possint[3] videri, pirus
104 et cerasus et prunus. has[4] sequitur laurus, illam cupressus, dein punica, fici. et vites et oleae florentibus iam his germinant, concipiunt vergiliarum exortu: hoc sidus illarum est, floret autem solstitio vitis et quae paulo serius incipit olea. deflorescunt omnia septenis diebus non celerius, quaedam tardius,

[1] serotina . . . germinant *Detlefsen.*
[2] *V.l.* haec.
[3] *Rackham*: possit.
[4] has *add. Rackham.*

when it spreads it out. Those species which do not blossom only produce shoots and mature them. Some blossom at once during the process of budding, and are quick in the blossom but slow in ripening, for instance the vine; some blossom with a late budding and ripen quickly, for instance the mulberry, which buds the latest among cultivated trees and only when the cold weather is over, owing to which it has been called the wisest of the trees; but when its budding has begun it breaks out all over the tree so completely that it is completed in a single night with a veritable crackling.

XLII. Of the trees that we have spoken of as budding in winter at the rising of Aquila, the almond blossoms first of all, in the month of January, while in March it develops its fruit. The next to flower after the almond is the Armenian plum,[a] then the jujube and the early peach—these exotic trees and forced; the first to flower in the order of nature are, of forest trees, the elder, which has a great deal of pith, and the male cornel, which has none; and of cultivated trees the apple, and a little afterwards, so that they can be seen blossoming simultaneously, the pear, the cherry and the plum. These are followed by the laurel, and that by the cypress, and then the pomegranate and the figs. When these are already flowering the vines and the olives also bud, and their sap rises at the rising of the Pleiades—that is their constellation, whereas the vine flowers at midsummer, and also the olive, which begins a little later. All begin to shed their blossom not sooner than a week after flowering, and some more slowly, but none more than a *Species in order of dates of flowering.*

[a] Probably the apricot, see XV. 41.

sed nulla pluribus bis septenis, omnia et intra VIII id. Iul. etesiarum praecursu.

105 XLIII. Nec statim fructus sequitur in aliquibus. cornus enim circa solstitia reddit primo candidum, postea sanguineum. ex eo genere femina post autumnum fert bacas acerbas et ingustabiles cunctis animantibus, ligno quoque fungosa et inutilis, cum mas e fortissimis durissimisque sit: tanta differentia
106 ab eodem genere fit sexu. et terebinthus messibus reddit semen et acer et fraxinus, nuces et mala et pira praeterquam hiberna aut praecocia autumno, glandiferae serius etiamnum, vergiliarum occasu, aesculus tantum autumno, incipiente autem hieme quaedam genera mali pirique et suber. abies floret croci colore circa solstitium, semen reddit post vergiliarum occasum; pinus autem et picea praeveniunt germinatione XV fere diebus, semen vero post vergilias et ipsae reddunt.

107 XLIV. Citreae et iuniperus et ilex anniferae habentur,[1] novusque fructus in his cum annotino pendet. in maxima tamen admiratione pinus est: habet fructum maturescentem, habet proximo anno ad maturitatem venturum ac deinde tertio. nec ulla arborum avidius se promittit: quo mense ex ea nux decerpitur eodem

[1] habeantur ? *Rackham.*

fortnight later, and all well within the 8th of July, anticipated by the trade-winds.

Dates of fruiting

XLIII. In the case of some trees the fruit does not follow immediately. The cornel produces its fruit about midsummer; it is at first white and afterwards blood-red. The female of the same kind bears its berries after autumn; they are sour and no animal will touch them; also its wood is spongy and of no use, although the timber of the male tree is one of the strongest and hardest there is, so great is the difference caused by sex in the same kind of tree. The terebinth and also the maple and the ash produce their seed at harvest time, but nut-trees, apples and pears, excepting winter or early varieties, in the autumn, and the acorn-bearing trees still later, at the setting of the Pleiades, the winter oak only in autumn, while some kinds of apple and pear and the cork-tree fruit at the beginning of winter. The fir flowers with a saffron-coloured blossom about midsummer and produces its seed after the setting of the Pleiades; but the pine and the pitch-pine come before it in budding by about a fortnight, though they themselves also drop their seed after the Pleiades.

Peculiarities of fruiting.

XLIV. Citrus-trees and the juniper and the holm-oak are classed as bearing all the year round, and on these trees the new crop of fruit hangs along with that of the previous year. The pine, however, is the most remarkable, as it carries both fruit that is beginning to ripen and that which will ripen in the following year and also in the year after next. Also no tree reproduces itself with more eagerness: within a month of a cone being plucked from it another cone is ripening in the same place, an arrangement

maturescit alia—sic dispensatur ut nullo non mense maturescant. quae se in arbore ipsa divisere azaniae vocantur, laeduntque ceteras nisi detrahantur.

108 XLV. Fructum arborum solae nullum ferunt—hoc est ne semen quidem—tamarix scopis tantum nascens, populus, alnus, ulmus Atinia, alaternus, cui folia inter ilicem et olivam; infelices autem existimantur damnataeque religione quae neque seruntur umquam neque fructum ferunt. Cremutius auctor est numquam virere arborem ex qua Phyllis se suspenderit. quae gummim gignunt post germinationem aperiunt[1]; gummis non nisi fructu detracto spissatur.

109 XLVI. Novellae arbores carent fructu quamdiu crescunt. perdunt facillime ante maturitatem palma, ficus, amygdala, malus, pirus, item punica, quae etiam roribus nimiis et pruinis florem amittit. qua de causa inflectunt ramos eius, ne subrecti umorem infestum excipiant atque contineant; pirus et amygdala, etiam si non pluat sed fiat austrinum caelum aut nubilum, amittunt florem, et primos fructus si
110 cum defloruere tales dies fuerint. ocissime autem salix amittit semen, antequam omnino maturitatem sentiat, ob id dicta Homero frugiperda; secuta aetas scelere suo interpretata est hanc sententiam, quando semen salicis mulieri sterilitatis medica-

[1] aperiuntur *edd.*

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[a] Or perhaps 'which only grows from shoots.'
[b] Daughter of Sithon, king of Thrace, who supposed her lover Demophoon to be unfaithful: Ovid, *Her.* III. 38.
[c] Ὠλεσίκαρπον, *Od.* X. 510.

which ensures that there are cones ripening in every single month of the year. Pine-cones that split while still on the tree are called azaniae, and if they are not removed they injure the rest of the crop.

Barren species. XLV. The only trees that bear no fruit—I mean not even seed—are the tamarisk, which is of no use except for making brooms,[a] the poplar, the alder, the Atinian elm and the alaternus, the leaves of which are between those of the holm-oak and the olive; but trees that never grow from seed nor bear fruit are considered to be unlucky and under a curse. Cremutius states that the tree from which Phyllis[b] hanged herself is never green. People open gum-producing trees after they have budded, but the gum does not thicken until after the fruit has been removed.

Varying liability to damage of fruit. XLVI. Sapling trees have no fruit as long as they are growing. The trees most liable to lose their fruit before it ripens are the palm, the fig, the almond, the apple and the pear, and also the pomegranate, which excessive dew and frost cause to lose its flower as well. In consequence of this people bend down its branches, lest if they shoot straight upright they may receive and retain the moisture which is injurious to them. The pear and almond lose their blossom even if it does not rain but a south wind sets in or the sky is cloudy, and if that sort of weather has prevailed after they have shed their blossom, they lose their first fruit. But it is the willow that loses its seed most quickly, before it approaches ripeness at all. This is the reason why Homer gives it the epithet 'fruit-losing';[c] but succeeding ages have interpreted the meaning of the word in the light of its own wicked conduct, inasmuch as it is well known that willow seed taken as a drug produces

mentum esse constat. sed in hoc quoque providens natura facile nascenti et depacto surculo incuriosius semen dedit. una tamen proditur ad maturitatem perferre solita in Creta insula ipso descensu Iovis speluncae durum [1] ligneumque magnitudine ciceris.

111 XLVII. Fiunt vero quaedam loci vitio infructuosae,[2] sicut in Paro silva Cende [3] quae nihil fert; Persicae arbores in Rhodo florent tantum. fit haec differentia et sexu, ut in iis quarum [4] mares non ferunt; aliqui hoc permutant et mares esse quae ferant tradunt. facit et densitas sterilitatem.

112 XLVIII. Gignentium autem quaedam et lateribus ramorum et cacuminibus ferunt, ut pirus, punica, ficus, myrtus. cetero eadem natura quae frugibus; namque et in eis spica in cacumine nascitur, legumina in lateribus. palma sola, ut dictum est, in spathis habet fructum racemis propendentem.

113 XLIX. Reliquis sub folio pomum ut protegatur, excepta fico, cui folium maximum umbrosissimumque, et ideo supra id pomum. eidem uni serius folium nascitur quam pomum. insigne proditur in quodam genere Ciliciae, Cypri, Helladis, ficos sub folio, grossos

[1] *Mayhoff*: dorum *aut* torum (torvum *edd.*).
[2] *Rackham*: infructuosa.
[3] Paro insula cende † ? *Mayhoff*.
[4] *Rackham*: quae.

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[a] The Dictaean Cave at Cnossos on the north side of Crete, recently excavated by Evans.

[b] Unknown; the text should perhaps be altered to give 'for instance, the *cende* on the island of Paros' (with the assumption that the name of the tree has been corrupted in the MSS.).

barrenness in a woman. But Nature, showing her foresight in this matter also, has been rather careless about bestowing seed on a tree that is propagated easily even from a planted sprig. It is said however that one variety of willow usually carries its seed till it ripens; this grows on the island of Crete just by the path coming down from the Cave [a] of Jupiter; it has a hard woody seed of the size of a chick-pea.

Local infertility of fruit-trees.

XLVII. Some trees are rendered barren by a fault in the locality, for instance the forest of Cende [b] on Paros, which bears nothing; and the peach-trees on Rhodes only produce blossom. This peculiarity is also caused by sex, as in the kinds of trees of which the males do not bear; though some people reverse this and assert that it is the male trees that bear. Another cause of barrenness is thick growth of leaves.

Position of fruit on the tree.

XLVIII. Some trees producing fruit bear it both on the sides and at the end of their branches, for instance the pear, the pomegranate, the fig and the myrtle. In other respects they have the same nature as cereal plants, for in their case also the ear grows at the tip of the stalks, whereas beans grow on the sides. The palm-tree alone, as has been stated, XIII. 30. has its fruit, enclosed in spathes, hanging down in bunches.

Fruit sheltered by foliage.

XLIX. The remaining trees have their fruit underneath their leaves for its protection, except the fig, the leaf of which is very large and gives a great deal of shade, and because of this the fruit hangs above the leaves. The fig is also the only tree whose leaf forms later than the fruit. A remarkable thing reported in the case of a certain kind of fig-tree found in Cilicia and Cyprus and on the mainland of Greece is that the figs grow underneath the leaves,

vero post folium nasci. ficus et praecoces habet quas Athenis prodromos vocant, in Laconico genere maxime.

114 Sunt et biferae in isdem; (L.) in Coo insula caprifici triferae sunt: primo fetu sequens evocatur, sequenti tertius. hoc fici caprificantur. et caprifici autem ab adversis foliis nascuntur. biferae et in malis ac piris quaedam, sicut et praecoces. malus silvestris bifera: sequens eius fructus post arcturum,
115 in apricis maxime. vites quidem et triferae sunt, quas ob id insanas vocant, quoniam in his alia maturescunt, alia turgescunt, alia florent. M. Varro auctor est vitem fuisse Zmyrnae apud Matroon triferam et malum in agro Consentino. hoc autem evenit perpetuo in Tacapensi[1] Africae agro (de quo plura alias), ea est soli fertilitas. trifera est et cupressus; namque bacae eius colliguntur mense Ianuario et Maio et Septembri, ternasque earum gerit magnitudines.

116 Est vero et in ipsis arboribus etiam onustis peculiaris differentia: summa sui parte fertiliores arbutus, quercus, inferiore iuglandis, fici mariscae. omnis quo

[1] *Brotier coll.* XVIII 188: Venesi.

but the abortive fruit that does not mature forms after the leaves have grown. The fig-tree also produces an early crop of fruit, called at Athens 'forerunners,' especially in the Spartan variety.

Double cropping.

In the same class of fruit-trees there are some that bear two crops, (L.) and on the island of Cos the wild figs bear three, the first eliciting a following crop and the following crop a third one. It is this last crop that is used in the process of caprification. xv. 81. But in the wild fig also the fruit grows at the back of the leaves. Among the apples and the pears there are some that bear two crops a year, as also there are some early varieties. The wild apple bears twice, its second crop coming after the rising of Arcturus, especially in sunny localities. There are indeed vines that actually bear three crops, which consequently people call 'mad vines,' because on these some grapes are ripening while others are just beginning to swell and other bunches are only in flower. Marcus Varro states that there once was a *R.R.* I. 7, 6. vine at the temple of the Mother of the Gods in Smyrna that bore three times a year, and an apple tree in the district of Cosenza that did the same. But this regularly occurs in the district of Tacupe in Africa (about which we shall say more in another xviii. 186. place), such is the fertility of the soil. The cypress also bears three times, for its berries are gathered in January, May and September, and those of each crop are of a different size.

Other varieties as to fruiting.

But also in the trees themselves, even when laden with fruit, there is a difference between different kinds: the arbutus and the oak bear more fruit in their upper part and the walnut and the marisca fig on their lower branches. All trees bear earlier the

magis senescunt hoc maturius ferunt, et in apricis locis nec pingui terra; silvestria[1] omnia tardiora: quaedam ex his omnino nec maturescunt. item quae subarantur aut quae ablaqueantur celeriora neglectis; haec et fertiliora.

117 LI. Alia[2] etiamnum aetatis differentia. amygdala enim et pirus in senecta fertilissimae ut et glandiferae et quoddam genus ficorum, ceterae in iuventa tardiusque maturantes, quod maxime notatur in vitibus; vetustioribus enim vinum melius, novellis copiosius. celerrime vero senescit et in senecta deteriorem fructum gignit malus; namque et minora poma proveniunt et vermiculis obnoxia, qui[3] et in ipsa
118 arbore nascuntur. ficus sola ex omnium arborum fetu maturitatis causa medicatur, iam quidem ex portentis quoniam maiora sunt pretia praeposteris. omnia autem celerius senescunt praefecunda; quin et protinus moriuntur aliqua caelo fecunditatem omnem eblandito, quod maxime vitibus evenit.
119 contra morus tardissime senescit, fructu minime laborans; tarde et ea quorum crispa materies, ut palma, acer, populus. et subarata ocius senescunt, silvestria autem tardissime. ideo et praeflorent talia

[1] *Pintianus*: silvestriora.
[2] Alia *vel* Mira *Mayhoff*, Est *edd.*: *om. codd.*
[3] qui? *Mayhoff*: quin.

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[a] The reference is to vegetable manure, not to caprification, XV. 73.

older they grow, and bear earlier in sunny places and on a thin soil; all wild trees are later, some of them never ripening their fruit at all. Similarly trees that have the earth underneath them ploughed or broken up ripen their fruit quicker than ones that are not attended to; those so treated also bear larger crops.

LI. Moreover there is another difference, connected with age. Almond-trees and pears have the largest crops in their old age, as also do the acorn-bearing trees and one kind of fig, but all the other fruit-trees when young and when ripening more slowly; and this is especially noticeable in the case of vines, for the older vines make better wine and the young ones give a larger quantity. The apple however grows old very quickly and in its old age bears inferior fruit, as the apples it produces are smaller and liable to be worm-eaten, the worms being also generated on the tree itself. The fig is the only one of all the trees grown that is given a drug [a] to assist its ripening—truly a portentous thing, that greater prices are paid for fruit out of season! But all fruit-trees that bear their fruit before the proper time grow old prematurely; indeed some die at once when the weather has lured them to surrender their whole stock of fertility, a thing that happens most of all to vines. The mulberry, on the other hand, grows old very slowly, being very little exhausted by its crop; and also the trees whose timber has wrinkled markings age slowly, for instance the palm, the maple and the poplar. Also trees grow old more quickly when the earth under them is ploughed, whereas forest trees age very slowly. Consequently trees carefully tended blossom earlier

Varieties due to age of trees.

et praegerminant, in totum[1] praecocia fiunt, atque in totum omnis cura fertilitatem adicit, fertilitas senectam[2] quoniam omnis infirmitas caelo magis oboedit.

120 LII. Multae plura gignunt, ut diximus in glandiferis; inter quas laurus uvas suas, maximeque sterilis quae non gignit aliud; ob id a quibusdam mas existimatur. ferunt et abellanae iulos conpactili callo, ad nihil utiles; plurima vero ilices,[3] nam et semen suum et granum quod crataegum vocant, et a septentrione viscum, a meridie hyphear, de quis plura mox paulo, interdumque pariter res quaternas habent.

121 LIII. Arbores quaedam simplices, quibus a radice caudex unus et rami frequentes, ut olivae, fico, viti; quaedam fruticosi generis, ut paliurus, myrtus, item nux abellana, quin immo melior et copiosior fructu in plures dispersa ramos. hi quibusdam omnino nulli,
122 ut in sato[4] genere buxo, loto transmarinae. quaedam bifurcae atque etiam in quinas partes diffusae, quaedam dividuae nec ramosae, ut sabuci, quaedam individuae, ramosae, ut piceae. quibusdam ramorum ordo, sicut piceae, abieti, alias inconditus, ut robori, malo, piro. et abieti quidem subrecta divisura

[1] in totum *Mayhoff*: totum *aut* tota.
[2] atque . . . senectam *hic Rackham*: *supra ante* ideo.
[3] *Mayhoff* (ilex *Pintianus e Theophr.*): buxiis (buxus *edd.*).
[4] *Mayhoff*: suo.

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[a] The passage is hardly intelligible as it stands, and if the text is not corrupt, it may be conjectured that Pliny did not understand his authority.

[b] The MSS. give 'the box-tree.'

[c] Crataegus is normally the Greek for a thorn-bush.

and bud earlier, and are in advance of the season generally; and in general all attention adds fertility, while fertility advances old age, because every weakness is rendered more subject to the weather.

LII. Many trees grow several products, as we said in the case of acorn-bearing trees. Among them, the laurel bears its own grapes,[a] and especially the barren laurel, which produces nothing else, and which is consequently thought by some people to be the male tree. Hazels also bear catkins of a hard, compact shape, which are of no use for any purpose; but the holm-oak [b] produces the greatest number of things, for it grows both its own seed and the grain called crataegus,[c] and mistletoe grows on the north side of the tree and hyphear on the south side—we shall say more about these a little later—and occasionally the trees have all four of these things together.

Other products beside fruit.

§§ 26 ff.

§ 245.

LIII. Some trees are of simple shape, having one stem rising from the root and a number of branches, as the olive, fig and vine; some belong to the bushy class, as the Christ's thorn and the myrtle, and also the hazel—in fact this bears better and more abundant nuts when it spreads out into many branches. Some trees have no branches at all, for instance the box of the cultivated variety and the foreign lotus. Some trees are forked, and even branch out into five parts, some divide the trunk but have no branches, as is the case with the elder, and some are undivided and have branches, like the pitch-pines. Some have their branches in a regular order, for instance the pitch-pine, the fir, with others their arrangement is irregular, as with the oak, apple and pear. Also in the case of the fir the

Varieties of branching in trees.

ramique in caelum tendentes, non in latera proni. 123 mirum, cacuminibus eorum decisis moritur, totis vero detruncatis durat; et si infra quam rami fuere praecidatur, quod superest vivit, si vero cacumen tantum auferatur, tota moritur. aliae ab radice bracchiatae, ut ulmus, aliae in cacumine ramosae,[1] ut pinus, faba Graeca, quam Romae a suavitate fructus, silvestris quidem sed cerasorum paene natura, 124 loton appellant. praecipue domibus expetitur ramorum petulantia brevi caudice latissima expatiantium umbra et in vicinas domos saepe transilientium. nulla opacitas brevior, nec auferunt rami [2] solem hieme decidentibus foliis. nullis cortex iucundior aut oculos excipiens blandius, nullis rami longiores validioresque aut plures, ut dixisse totidem arbores liceat. cortice pelles tingunt, radice lanas. malis proprium genus: ferarum enim rostra reddunt adhaerentibus uni maximo minoribus.

125 LIV. Ramorum aliqui caeci, qui non germinant, quod natura fit si non evaluere, aut poena cum deputatos cicatrix hebetavit. quae dividuis in ramo natura est haec viti in oculo, harundini in geniculo. omnium

[1] *Rackham*: alia . . . bracchiata . . . alia . . . ramosa.
[2] rami *add. Mayhoff.*

[a] The Italian persimmon; the identification with *faba Graeca* (the date-plum) is a mistake.

branching is nearly vertical and the boughs project upward towards the sky, and do not slope down sideways. It is a remarkable thing that this tree dies if the tops of the branches are lopped, but survives if they are cut off entirely from the trunk; also should the trunk be cut off below where the branches were, what remains lives, whereas if only the top be removed the whole tree dies. Some trees branch out from the root up, like the elm, others throw out boughs only at the top, like the pine and the Greek bean-tree, which at Rome they call the lotus[a] because of the sweetness of its fruit, which although growing wild almost resembles cherries. The exuberance of its branches makes it specially in request for houses, as they grow on a short main stem and spread out with a very wide expanse of shade, often leaping across to the neighbouring mansions. No shady foliage is more short-lived, and the branches do not take away the sun, their leaves falling in winter. No trees have bark that is more agreeable or attractive to look at, and none have branches that are longer and stouter or more numerous, so that they might be described as being themselves so many trees. Their bark serves for staining hides and their root for dyeing wool. Apple trees have branches of a peculiar kind, resembling the muzzles of wild animals, several smaller boughs being attached to one very large one.

Varieties of growth.

LIV. Some branches are without eyes and do not form buds, this being a natural consequence of their not having fully developed, or else a penalty when a scar inflicted in pruning has blunted their powers. In a vine the eye and in a reed the joint contain the same nature that trees which spread out have in their

terrae proxima crassiora. in longitudinem excrescunt abies, larix, palma, cupressus, ulmus et si qua unistirpia. ramosarum cerasus etiam in XL cubitorum trabes aequali per totam duum cubitorum crassitudine reperitur. quaedam statim in ramos sparguntur, ut mali.

126 LV. Cortex aliis tenuis, ut lauro, tiliae, aliis crassus, ut robori, aliis levis, ut malo, fico, idem scaber robori, palmae, omnibus in senecta rugosior. quibusdam rumpitur sponte, ut viti, quibusdam etiam cadit, ut malo, unedoni. carnosus suberi, populo, membranaceus viti, harundini, libris similis ceraso, multiplex tunicis vitibus, tiliae, abieti, quibusdam simplex, ut fico, harundini.

127 LVI. Magna et radicum differentia: copiosae fico, robori, platano, breves et angustae malo, singulares abieti, larici; singulis enim innituntur, quamquam minutis in latera dispersis. crassiores lauro et inaequales, item oleae, cui et ramosae; at robori carnosae. robora suas in profundum agunt: si Vergilio quidem credimus, aesculus quantum corpore
128 eminet tantum radice descendit. oleae malisque et

branch. With all trees the parts nearest the ground are thicker. The fir, the larch, the palm, the cypress, the elm and all the trees with a single trunk make their growth in the direction of height. Among the branching trees the cherry is found making timbers as much as 20 yards long and a yard thick for the whole length. Some trees spread out into branches at once, for example apples.

Varieties of bark.

LV. The bark of some trees is thin, as in the laurel and the lime, that of others thick, as in the oak; in some it is smooth, as in the apple and the fig, but it is rough in the oak and the palm, and in all trees it becomes more wrinkled in old age. With certain trees, for instance the vine, it bursts of its own accord, while certain others actually shed their bark, for instance the apple and the arbutus. The bark of the cork-tree and the poplar is fleshy, that of the vine and the reed is like a skin; in the cherry it resembles the layers of the papyrus; the skin of the vine, the lime and the fir consists of a number of coats, but in some cases it is a single layer, for instance in the fig and the reed.

Varieties of root-structure and depth.

LVI. There is also a great difference in the roots of trees: those of the fig, the hard-oak and the plane are abundant, those of the apple short and thin, those of the fir and larch single, as these trees are supported by a single root, although it throws out small fibres laterally. The roots of the laurel are rather thick and of uneven shape, and the same with the olive, the roots of which also form branches, but those of the hard-oak are fleshy. Hard-oaks drive their roots down deep, indeed the winter oak, at all events if we believe Virgil, goes down as deep with its root as it projects upward with its trunk. The

Georg. II. 291.

cupressis serpunt[1] per summa caespitum, aliis recto meatu, ut lauro, oleae, aliis flexuoso, ut fico. minutis haec capillamentis hirsuta, ut[2] et abies multaeque silvestrium, e quibus montani praetenuia fila decerpentes spectabiles lagoenas et alia vasa nectunt.
129 quidam non altius descendere radices quam solis calor tepefaciat idque natura loci[3] tenuioris crassive[4] dixere; quod falsum arbitror: apud auctores certe invenitur, abietis planta cum transferretur, octo cubitorum altitudine[5] nec totam refossam sed abruptam. maxima spatio atque plenitudine citri
130 est, ab ea platani, roboris et glandiferarum. quarundam radix vivacior superficie, ut laurus; itaque cum trunco inaruit, recisa etiam laetius fruticat. quidam brevitate radicum celerius senescere arbores putant, quod coarguunt fici, quarum radices longissimae et senectus ocissima. falsum arbitror et quod aliqui prodidere, radices arborum vetustate minui; visa enim est annosa quercus eversa tempestatis vi iugerum soli amplexa.

131 LVII. Prostratas restitui plerumque et quadam terrae cicatrice revivescere[6] volgare est. familiaris-

[1] serpunt *add.* ? *Mayhoff.*
[2] ut *add.* ? *Mayhoff.*
[3] soli ? *Rackham.*
[4] crassiorisve *Gelen.*
[5] altitudine ? *Mayhoff*: in altitudinem.
[6] *Rackham*: vivescere.

olive and apple and cypresses spread their roots through the top layer of the turf, in some cases shooting straight out, as with the laurel and olive, and in other cases winding about, as with the fig. This tree bristles with fine filaments, as also do the fir and a number of forest trees, from which the mountain people pluck extremely thin threads and plait them into handsome flasks and other vessels. Some people have stated that the roots of trees do not go down deeper than the warmth of the sun's heat can reach, and this according to the nature of the soil, whether rather thin or heavy; but I think that this is incorrect, as it is certainly found in the authorities that when a fir-tree was transplanted it measured four yards in depth, though it had not been dug up whole but had been broken off. The root of the citrus-wood tree is the largest in extent and abundance, and next to it those of the plane, the hard-oak and the acorn-bearing trees. Some trees have a root that is more tenacious of life than the part above ground, for instance the laurel; and accordingly, when it has withered in the trunk, if it is cut back it shoots again even more vigorously. Some people think that trees grow old more quickly owing to having short roots, but this is disproved by fig-trees, which have very long roots and grow old very quickly. I also consider false a statement that has been made by some persons, to the effect that the roots of trees become smaller with age, for an aged oak when overturned by a violent storm has been seen to embrace a Roman acre of ground.

LVII. It is a common occurrence for fallen trees often to be replaced and to come back to life again owing to the earth forming a sort of scab over the *Fallen or lopped trees growing again.*

simum hoc platanis, quae plurimum ventorum concipiunt propter densitatem ramorum, quibus amputatis levato onere in suo scrobe reponuntur; factumque iam est hoc et in iuglandibus oleisque ac
132 multis aliis. est in exemplis et sine tempestate ullave causa alia quam prodigii cecidisse multas ac sua sponte resurrexisse. factum hoc populi Romani Quiritibus ostentum Cimbricis bellis Nuceriae in luco Iunonis ulmo, postquam etiam cacumen amputatum erat quoniam in aram ipsam procumbebat, restituta sponte ita ut protinus floreret, a quo deinde tempore maiestas p. R. resurrexit quae ante vastata
133 cladibus fuerat. memoratur hoc idem factum et[1] Philippis salice procidua atque detruncata, et Stagiris in museo populo alba, omnia fausti ominis. sed maxime mirum, Antandri platanus etiam circumdolatis lateribus restibilis sponte facta vitaeque reddita longitudine xv cubitorum, crassitudine quattuor ulnarum.

134 LVIII. Arbores quas naturae debeamus tribus modis nascuntur, sponte aut semine aut ab radice. cura numerosior extitit, de qua suo dicemus volumine; nunc enim totus sermo de natura est multis modis

[1] *Rackham*: et in.

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[a] Pliny seems to use *ulna* of a vertical length equal to *cubitum* horizontally, 18 inches.

wound. This is most common with plane trees, which hold a very large quantity of wind because of the density of their branches, which are lopped to relieve the trees of the weight and the trees are then replanted in their own hole; and this has before now also been done in the case of walnuts and olives and a number of other trees. There are also many cases of trees having fallen even without a storm or any other cause except one of a miraculous nature and having risen up again of their own accord. This portent occurred to the citizens of the Roman 113–101 B.C. nation during the Cimbrian wars in the case of an elm in the grove of Juno at Nocera, actually after its top had been lopped off because it was leaning forward right on to the altar; the tree was restored of its own accord so completely that it at once flowered, and from that date onward the majesty of the Roman people recovered, after having previously been ravaged by disasters in war. It is recorded that this also happened at Philippi with a willow that had fallen down and had been severed from its trunk, and at Stagira with a white poplar in the shrine of the Muses, all of these occurrences being of good omen. But most wonderful of all, a plane-tree at Antandros recovered of its own accord and was restored to life even after its sides had been rough-hewn all round, a tree $22\frac{1}{2}$ feet high and 6 feet[a] thick.

Propagation of trees.

LVIII. Those trees which we owe to Nature grow in three ways, spontaneously or by seed or from a root. More numerous artificial methods have come into existence, about which we shall speak in the volume XVII. 58. given to the subject; for at the present our whole discourse is about Nature, so memorable for her

mirisque memorabili. namque non omnia in omnibus locis nasci docuimus, nec tralata vivere; hoc alias fastidio, alias contumacia, saepius inbecillitate eorum quae transferantur evenit, alias caelo invidente, alias solo repugnante.

135 LIX. Fastidit balsamum alibi nasci,[1] nata Assyria malus alibi ferre, nec non et palma ubique nasci aut nata parere vel, cum promisit etiam ostenditque, educare, tamquam invita pepererit. non habet vires frutex cinnami in Syriae vicina perveniendi. non ferunt amomi nardique deliciae ne in Arabiam quidem ex India et nave peregrinari; temptavit enim
136 Seleucus rex. illud maxime mirum, ipsas plerumque arbores exorari ut vivant atque tramigrent, aliquando et a solo impetrari ut alienas alat advenasque nutriat, caelum nullo modo flecti. vivit in Italia piperis arbor, casiae vero etiam in septentrionali plaga, vixit in Lydia turis, sed unde sorbentes sucum omnem ex
137 his soles coquentesve lacrimam? illud proxime mirum, mutari naturam in iisdem locis[2] atque pro indiviso valere. cedrum aestuosis partibus dederat, set[3] in Lyciis Phrygiisque montibus nascitur. frigus

[1] nasci ⟨nisi in Iudaea⟩ *Bostock and Riley.*
[2] locis *om. v.l.*
[3] *Mayhoff*: et.

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[a] Bostock and Riley assume that the words 'than in Judea' have fallen out.
[b] Literally 'at an undivided rate.'

manifold and marvellous methods. In fact, we have shown that not all trees will grow in all places, or live if removed from one place to another; this is due in some cases to antipathy, in others to obstinacy, more frequently to the weakness of the specimens transplanted, because in some cases the climate is unfavourable and in others the soil is incompatible.

Transplantation of trees from their habitat.

LIX. Balm of Gilead disdains to grow elsewhere,[a] and a citron grown in Assyria will not bear elsewhere; and likewise the palm also will not grow everywhere or, even if it does grow, bear fruit, or else even when it has made a promise and a show of bearing, refuses to mature the fruit, seeming to have given birth to it against its will. The cinnamon shrub has not the strength to travel to the neighbourhood of Syria. The delicate perfumes of amomum and nard cannot endure to travel out of India and be conveyed by sea even as far as Arabia—an attempt to import them was made by King Seleucus. What is most surprising is that although the trees themselves can usually be persuaded to live and to bear transplantation, and occasionally even the soil will grant the request to nourish foreigners and give food to immigrants, the climate is absolutely unrelenting. The pepper-tree will live in Italy, and the casia-plant even in a northern region, and the incense-tree has been known to live in Lydia, but where are we to get the sunshine that sucks all the juice out of these plants or ripens the drops of essence that they shed? It is nearly as surprising that Nature may alter in the same localities and yet retain a hundred per cent[b] of her vigour. She had bestowed the cedar on the regions of torrid heat, but it grows in the mountains of Lycia and Phrygia. She had made cold

inimicum lauro fecerat, sed in Olympo copiosior nulla est. circa Bosporum Cimmerium in Panticapaeo urbe omni modo laborabit Mithridates rex et ceteri incolae sacrorum certe causa laurum myrtumque habere: non contigit, cum teporis arbores abundent ibi, punicae ficique, iam mali et piri laudatissimae.
138 frigidas eodem tractu non genuit arbores, pinum, abietem, piceam. et quid attinet in Pontum abire? iuxta Romam ipsam castaneae cerasique aegre proveniunt, persica in Tusculano, nuces[1] Graecae cum taedio inseruntur Tarracina silvis scatente earum.

139 LX. Cupressus advena et difficillime nascentium fuit, ut de qua verbosius saepiusque quam de omnibus aliis prodiderit Cato, satu morosa, fructu supervacua, bacis torva, folio amara, odore violenta ac ne umbra quidem gratiosa, materie rara, ut paene fruticosi generis, Diti sacra et ideo funebri
140 signo ad domos posita. femina ⟨fert semen, mas⟩[2] sterilis. diu metae demum aspectu non repudiata distinguendis tantum vinearum ordinibus, nunc vero tonsilis facta in densitatem[3] parietum coercitaque gracilitate perpetuo teres[4] trahitur etiam in picturas operis topiarii, venatus classesve et imagines rerum

[1] *Mayhoff*: Tusculano non nuces.
[2] *Mayhoff.*
[3] *Mayhoff*: densitate.
[4] *Salmasius*: tere *aut* terra *aut* tenera.

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[a] *R.R.* XLVIII, CLI.
[b] MSS. 'The female is sterile'; Mayhoff, comparing XVII. 73, marks a lacuna, and from § 247 conjectures the above insertion.

unfriendly to the laurel, but no tree is more frequent on Mount Olympus. In the city of Kertch in the neighbourhood of the Cimmerian Bosphorus, King Mithridates and the rest of the natives had toiled in every way to have the laurel and the myrtle, at all events for ritual purposes, but they did not succeed, although trees belonging to a mild climate abound there, pomegranates and figs, as well as apples and pears that win the highest praise. In the same region Nature has not produced the trees that belong to cold climates—pine, fir and pitch-pine. And what is the point of our going abroad to the Black Sea? In the actual neighbourhood of Rome chestnuts and cherries only grow with reluctance, and the peach-tree round Tusculum, and almonds are laboriously grown from graft, although Tarracina teems with whole woods of them.

Naturalisation of the cypress for use in fancy gardening.

LX. The cypress is an exotic, and has been one of the most difficult trees to rear, seeing that Cato[a] has written about it at greater length and more often than about all the other trees, as stubborn to grow, of no use for fruit, with berries that cause a wry face, a bitter leaf, and a pungent smell: not even its shade agreeable and its timber scanty, so that it almost belongs to the class of shrubs; consecrated to Dis, and consequently placed at the doors of houses as a sign of mourning. The female bears seed but the male is sterile.[b] For a long time past merely owing to its pyramidal appearance it was not rejected just for the purpose of marking the rows in vineyards, but nowadays it is clipped and made into thick walls or evenly rounded off with trim slenderness, and it is even made to provide the representations of the landscape gardener's work, arraying hunting

tenui folio brevique et virente semper vestiens.
141 duo genera earum: meta in fastigium convoluta, quae et femina appellatur; mas spargit extra se ramos deputaturque et accipit vitem. utraque autem immittitur in perticas asseresve amputatione ramorum, qui XIII anno denariis singulis veneunt, quaestuosissima in satus ratione silva; vulgoque dotem filiae antiqui plantaria ea appellabant. huic patria insula Creta, quamquam Cato Tarentinam eam appellat, credo, quod primum eo venerit. et in
142 Aenaria succisa regerminat; sed in Creta quocumque in loco terram moverit quispiam, nisu[1] naturali haec gignitur protinusque emicat, illa vero etiam non appellato solo ac sponte, maximeque in Idaeis montibus et quos Albos vocant summisque in iis[2] unde numquam nives absunt plurima, quod miremur, alibi non nisi in tepore proveniens et nivem magno opere fastidiens.

143 LXI. Nec terrae tantum natura circa has refert aut perpetua caeli, verum et quaedam temporaria vis: imbres aliqua[3] plerumque semina adferunt, et certo fluunt genere, aliquando etiam incognito, quod accidit Cyrenaicae regioni, cum primum ibi laserpi-

[1] *Salmasius*: nisi.
[2] *Rackham*: his.
[3] *Mayhoff*: imbrium aquae *aut alia*.

scenes or fleets of ships and imitations of real objects with its narrow, short, evergreen leaf. There are two kinds of cypress: the pyramid, tapering upward in a spiral, which is also called the female cypress, and the male cypress which spreads its branches outward from itself, and is pruned and used as a prop for a vine. Both the male and the female are allowed to grow up so as by having their branches lopped off to form poles or props, which after twelve years' growth sell for a denarius apiece, a grove of cypresses being a most profitable item in one's plantation account; and people in old days used commonly to call cypress nurseries a dowry for a daughter. The native country of this tree is the island of Crete, although Cato calls it Taranto cypress, no doubt because that place was where it was first imported. In the island of Ischia also, if cut down, it will shoot up again; but in Crete this tree is produced by spontaneous generation wherever anybody stirs the earth, and shoots out at once, in this case in fact even without any demand being made of the soil and of its own accord, and especially in the mountains of Ida and those called the White Mountains, and in the greatest number on the very summits of the peaks that are never free from snow, which may well surprise us, as the tree does not occur elsewhere except in a warm climate and has a great dislike for snow.

Varieties of cypress.

R.R. CLI.

LXI. Nor is only the nature of the soil important in relation to these trees, or the permanent character of the weather, but also a certain temporary influence that it exerts: showers of rain usually bring with them certain seeds, and seeds of a certain kind stream down, occasionally even some of an unknown kind, which happened in the district of Cyrenaica, when

Trees sown accidentally.

cium natum est, ut in herbarum natura dicemus. nata est et silva urbi ei proxima imbre piceo crassoque.

144 LXII. Hedera iam dicitur in Asia nasci. circiter urbis Romae annum ccccxxxx[1] negaverat Theophrastus, nec in India nisi in monte Mero, quin et Harpalum omni modo laborasse ut sereret eam in Medis frustra, Alexandrum vero ob raritatem ita coronato exercitu victorem ex India redisse exemplo Liberi patris; cuius dei et nunc adornat thyrsos galeasque etiam ac scuta in Thraciae populis sollemnibus sacris, inimica arboribus satisque omnibus, sepulchra, muros rumpens, serpentium frigori gratissima, ut mirum sit ullum honorem habitum ei.

145 Duo genera prima ut reliquarum, mas atque femina. maior traditur mas et corpore et folio, duriore etiam ac pinguiore ut et[2] flore ad purpuram accedente; utriusque autem similis est rosae silvestri, nisi quod caret odore. species horum generum tres; est enim candida aut nigra hedera, tertiaque vocatur
146 helix. etiamnum hae species dividuntur in alias, quoniam est aliqua fructu tantum candida, alia et folio; fructum quoque candidum ferentium aliis densus acinus et grandior, racemis in orbem circumactis qui vocantur corymbi, iidem Silenici cum est minor acinus, sparsior racemus—ut[3] simili modo in

[1] circiter *etc. hic* (*addito* x) *Urlichs*: *ante* Hedera *codd.*
[2] ut et? *Mayhoff*: set *aut* et.
[3] ut *add. hic Rackham, post* modo *Mayhoff.*

laser first grew there, as we shall say in the section dealing with herbaceous plants. Also near that city a shower of thick, pitchy rain caused a wood to grow up. XIX. 41.

Ivy, its distribution.

LXII. It is said that ivy now grows in Asia Minor. Theophrastus about 314 B.C. had stated that it did not grow there, nor yet in India except on Mount Meros, and indeed that Harpalus had used every effort to grow it in Media without success, while Alexander had come back victorious from India with his army wearing wreaths of ivy, because of its rarity, in imitation of Father Liber; and it is even now used at solemn festivals among the peoples of Thrace to decorate the wands of that god, and also the worshippers' helmets and shields, although it is injurious to all trees and plants and destructive to tombs and walls, and very agreeable to chilly snakes, so that it is surprising that any honour has been paid to it.

Varieties of ivy.

There are two primary kinds of ivy, as of the rest of the plants, the male and the female. The male is said to have the larger stem and leaf, which also are harder and have more sap, and so it also has a larger flower, approaching purple in colour; but the flower of both male and female resembles the wild rose, except that it has no scent. These kinds each comprise three species, for ivy is white or black and a third species is called helix. Moreover these species divide into others, since one kind only has white fruit but another has a white leaf as well; also in some of those bearing white fruit the berry is closely packed and rather large, hanging in round bunches which are called 'clusters,' and also Silenici when the berry is smaller and the bunch less compact—as

147 nigra. alicui et semen nigrum, alii crocatum, cuius coronis poetae utuntur, foliis minus nigris, quam quidam Nysiam, alii Bacchicam vocant, maximis inter nigras corymbis. quidam apud Graecos etiamnum duo genera huius faciunt a colore acinorum, erythranum et chrysocarpum.

148 Plurumas autem habet differentias helix, quoniam folio maxime distat. parva sunt et angulosa concinnioraque, cum reliquorum generum simplicia sint. distat et longitudine internodiorum, praecipue tamen sterilitate, quoniam fructum non gignit. quidam hoc aetatis esse, non generis existimant, primoque
149 helicem esse, fieri hederam vetustate. horum error manifestus intellegitur, quoniam helicis plura genera reperiuntur, sed tria maxime insignia: herbacea ac virens quae plurima est, altera candido folio, tertia versicolori, quae Thracia vocatur. etiamnum herbaceae tenuiora folia et in ordinem digesta densioraque,
150 in alio genere diversa omnia; et in versicolori alia tenuioribus foliis et similiter ordinatis densioribusque est, alteri generi neglecta haec omnia, maiora quoque aut minora sunt folia macularumque habitu distant; et in candidis alia aliis [1] sunt candidiora.
151 adulescit in longitudinem maxime herbacea; arbores

[1] aliis *add. Rackham.*

similarly occurs in the black variety. Also one kind has a black seed and another a seed of the colour of saffron; the latter ivy is used by poets for their wreaths, and its leaves are not so dark in colour; some people call it Nysian ivy and others Bacchic ivy, and it has the largest clusters of all the black ivies. Some people among the Greeks also make two classes of this variety, depending on the colour of the berries—red-berry ivy and golden-fruit ivy.

The helix, its characteristics and varieties.

But it is the helix which has most varieties of all, as it differs very greatly in leaf. The leaves are small and angular and of a rather elegant shape, whereas those of the remaining kinds are plain and simple. It differs also in the distance between the joints, but particularly in its infertility, as it does not bear any fruit. Some people think that this is a matter of age and not of kind, and that the plant begins as a helix and becomes an ivy when it gets old. This is seen to be a clear mistake on their part, inasmuch as we find several more kinds of helix, but three that are most noticeable—the grass-green helix which is the commonest, a second kind with a white leaf, and a third kind with a variegated leaf, which is called Thracian ivy. Moreover there is a grass-ivy with rather narrow and symmetrically arranged and rather thickly growing leaves, and in another variety all these points are different; also in the variegated ivy one variety has narrower leaves arranged in a similar way and clustering more thickly, and another variety entirely lacking these features, and also the leaves are either larger or smaller, and differ in the arrangement of their markings; and in the white ivy in some cases the leaves are whiter than in others. The grass-green ivy grows the longest shoots; but

autem necat candida omnemque sucum auferendo tanta crassitudine augetur ut ipsa arbor fiat. signa eius folia maxima atque latissima, mammae rigentes[1] quae sunt ceteris inflexae, racemi stantes ac subrecti. et quamquam omni[2] hederarum generi radicosa bracchia, huic tamen maxime ramosa ac robusta, ab
152 ea nigrae. sed proprium albae quod inter media folia emittit bracchia utrimque semper amplectens, hoc et in muris quamvis ambire non possit. itaque etiam pluribus locis intercisa vivit tamen duratque, et totidem initia radicum habet quot bracchia, quibus incolumis et solida arbores sugit ac strangulat. est et[3] in fructu differentia albae nigraeque hederae, quoniam aliis tanta amaritudo acini ut aves non attingant. est et rigens hedera quae sine adminiculo stat sola omnium generum, ob id vocata orthocissos, e diverso numquam nisi humi repens chamaecissos.

153 LXIII. Similis est hederae e Cilicia quidem primum profecta sed in Graecia frequentior quam vocant smilacem, densis geniculata caulibus, spinosis frutectosa ramis, folio hederaceo, parvo, non anguloso, a pediculo emittente pampinos, flore candido, olente
154 lilium. fert racemos labruscae modo, non hederae, colore rubro, conplexa acinis maioribus nucleos ternos, minoribus singulos, nigros durosque, infausta

[1] mammae r. *Mayhoff*: mammas erigentes.
[2] omni? *Mayhoff*: omnium.
[3] et *add. e Theophr. edd.*

[a] A species of bind-weed.

it is the white ivy that kills trees, and by taking from them all their sap grows so thick a stalk as itself to become a tree. Its characteristics are very large, very broad leaves, fat stiff buds, which in the other kinds are bent, and clusters standing up erect; and although in every kind of ivy the arms take root, yet this kind has the most spreading and powerful arms, those of the black ivy coming next. But it is a peculiarity of the white ivy that it throws out arms among the middle of its leaves, with which it always embraces things on either side, this being the case even on walls, although it is unable to go round them. Consequently even though it is cut apart at several places nevertheless it lives and lasts on, and it has as many points to strike root with as it has arms, which make it safe and solid while it sucks and strangles trees. There is also a difference in the fruit of the white and the black ivy, since in some cases it is so bitter that birds will not touch it. There is also a stiff ivy, which is the only kind that will stand without a prop, and which consequently has the name in Greek of 'straight ivy'; while on the other hand the one called in Greek 'ground-ivy' is never found except creeping on the ground. *Standing ivy and ground ivy.*

LXIII. Resembling ivy is the plant called smilax,[a] which first came from Cilicia, but is now more common in Greece; it has thick jointed stalks and thorny branches that make it a kind of shrub; the leaf resembles that of the ivy, but is small and has no corners, and throws out tendrils from its stalk; the flower is white and has the scent of a lily. It bears clusters of berries like those of the wild vine, not of the ivy; they are red in colour, and the larger ones enclose three hard black stones but the smaller a single *Smilax.*

omnibus sacris et coronis, quoniam sit lugubris virgine eius nominis propter amorem iuvenis Croci
155 mutata in hunc fruticem. id volgus ignorans plerumque festa sua polluit hederam existimando, sicut in poetis aut Libero patre aut Sileno, quis omnino scit[1] quibus coronentur?

E smilace fiunt codicilli; propriumque materia est ut admota auribus lenem sonum reddat. hederae mira proditur natura ad experienda vina, si vas fiat e ligno eius, vina transfluere ac remanere aquam si qua fuerit mixta.

156 LXIV. Inter ea quae frigidis gaudent et aquaticos frutices dixisse conveniat. principatum in his tenebunt harundines belli pacisque experimentis necessariae atque etiam deliciis gratae. tegulo earum domus suas septentrionales populi operiunt, durantque aevis tecta talia; et in reliquo vero orbe
157 et camaras levissime suspendunt. chartisque serviunt calami, Aegyptii maxime cognatione quadam papyri; probatiores tamen Cnidii et qui in Asia circa Anaeticum lacum nascuntur. nostratibus fungosior subest natura, cartilagine bibula quae cavo corpore intus, superne tenui inarescit ligno, fissilis praeacuta
158 semper acie. geniculata cetero gracilitas nodisque

[1] *Mayhoff*: qui somno nescit.

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[a] Cato *R.R.* CXI.

[b] *I.e.*, reeds are used for javelins and fishing-rods, pens, etc., and for wind instruments.

[c] The reed of which paper was made.

stone. This plant is unlucky to use at all sacred rites and for wreaths, because it has a mournful association, a maiden named Smilax having been turned into a smilax shrub because of her love for a youth named Crocus. The common people not knowing this usually pollute their festivals with it because they think that it is ivy; just as in the case of the poets or Father Liber or Silenus, who wear wreaths made of who in the world knows what?

Smilax is used for making tablets; it is a peculiarity of this wood to give out a slight sound when placed to one's ear. It is said that ivy has a remarkable property [a] for testing wines, inasmuch as a vessel made of its wood allows wine to pass through it, water that has been mixed with the wine stops in the vessel.

Water-plants.

The reed, its structure and uses.

LXIV. Among the plants that like cold conditions it may also be proper to have the aquatic shrubs mentioned. The primacy among these will be held by the reeds, which are indispensable for the practices of war and of peace and are also acceptable for our amusement.[b] The northern peoples thatch their homes with reeds, and roofs of this kind last for ages, while in other parts of the world as well reeds also provide very light ceilings for rooms. And reeds serve as pens for writing on paper, especially Egyptian reeds owing to their kinship as it were with the papyrus; [c] although the reeds of Cnidus and those that grow round the Anaetic lake in Asia are more esteemed. Those of our country have a more fungous substance underneath the surface, made of spongy cartilage which has a hollow structure inside and a thin, dry, woody surface, and easily breaks into splinters which always have an extremely sharp edge. For the rest it is

distincta, leni fastigio tenuatur in cacumina crassiore paniculae coma, neque hac supervacua—aut enim pro pluma strata cauponarum replet aut, ubi lignosiore[1] induruit callo sicut in Belgis, contusa et interiecta navium commissuris feruminat textus glutino tenacior rimisque explendis fidelior pice.

159 LXV. Calamis orientis populi bella conficiunt, calamis mortem adcelerant pinna addita, calamis spicula addunt inrevocabili hamo noxia,[2] fitque et ex ipso telum aliud fracto in vulneribus. his armis solem ipsum obumbrant; propter hoc maxime serenos dies optant, odere ventos et imbres, qui inter illos pacem
160 esse cogunt. ac si quis Aethiopas, Aegyptios,[3] Arabas, Indos, Scythas, Bactros, Sarmatarum tot gentes et orientis omniaque Parthorum regna diligentius conputet, aequa ferme pars hominum in toto mundo
161 calamis superata degit. praecipuus hic usus in Creta bellatores suos nobilitavit; sed in hoc quoque, ut ceteris in rebus, vicit Italia, quando nullus sagittis aptior calamus quam in Rheno Bononiensi amne, cui plurima inest medulla pondusque volucre et contra

[1] *Pintianus*: limosiora.
[2] spicula . . . noxia *hic Urlichs*: *ante* mortem.
[3] *Rackham*: Aegyptum.

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[a] *I.e.*, the arrow.

of a slender appearance, jointed and divided with knots and tapering gradually off to the top with a rather thick tuft of hair, which also is not without value, as it either serves instead of feathers to stuff the beds of innkeepers, or in places where it grows very hard and woody in structure, as in Belgium, it is pounded up and inserted between the joints of ships to caulk the seams, holding better than glue and being more reliable for filling cracks than pitch.

LXV. The peoples of the East employ reeds in making war; by means of reeds with a feather added to them they hasten the approach of death, and to reeds they add points which deal wounds with their barb that cannot be extracted, and if the weapon itself breaks in the wound, another weapon is made out of it. With these weapons they obscure the very rays of the sun, and this is what chiefly makes them want calm weather and hate wind and rain, which compel the combatants to keep peace between them. And if anybody should make a rather careful reckoning of the Ethiopians, Egyptians, Arabs, Indians, Scythians and Bactrians, and the numerous races of the Sarmatians and of the East, and all the realms of the Parthians, almost one-half of mankind in the whole world lives subject to the sway of the reed.[a] It was outstanding skill in this employment of the reed in Crete that made her warriors famous; but in this also, as in all other things, Italy has won the victory, as no reed is more suitable for arrows than that which grows in the river at Bologna, the Reno, which contains the largest amount of pith and has a good flying weight and a balance that offers a sturdy resistance even to gusts of wind—an

Reed arrows.

flatus quoque pervicax libra: quippe non eadem gratia Belgicis. haec et Creticis commendatio, omnibus[1] quamquam praeferuntur Indici, quorum alia quibusdam videtur natura, quando et hastarum vicem
162 praebent additis cuspidibus. harundini quidem Indicae arborea amplitudo, quales vulgo in templis videmus. differre mares ac feminas in his quoque Indi tradunt: spissius mari corpus, feminae capacius. navigiorumque etiam vicem praestant, si credimus, singula internodia. circa Acesinen amnem maxime nascitur.

163 Harundo omnis ex una stirpe numerosa, atque etiam recisa fecundius resurgit. radix natura vivax, geniculata et ipsa. folia Indicis tantum brevia, omnibus vero a nodo orsa conplexu tenues per ambitum inducunt tunicas, atque a medio internodio cum plurimum desinunt vestire procumbuntque. latera harundini calamoque in rotunditate bina, super nodos alterno semper inguine, ut alterum a dextera fiat, alterum superiore geniculo ab laeva per vices. inde exeunt aliquando rami qui sunt calami tenues.

164 LXVI. Plura autem genera. alia spissior densiorque geniculis, brevibus internodiis, alia rarior maioribus,

[1] *Sillig*: commendationibus *aut* commendatis.

attraction which does not belong in the same degree to the shafts grown in Belgium. The reeds of Crete also have the same valuable property, although those from India are placed highest of all, some people believing that they belong to a different species, as with the addition of points they also serve the purpose of lances. The Indian bamboo indeed is of the size of a tree, as we see in the case of the specimens frequently found in our temples. The Indians say that in this plant also there is a difference between males and females, the male having a more compact body and the female a bulkier one. And a single length between knots, if we can believe it, will actually serve as a boat. The bamboo grows especially on the banks of the river Chenab. *The bamboo.*

Every kind of reed makes a great many stems from one root, and when it is cut down it grows again even more prolifically. The root is by nature very tenacious of life; it as well as the stem is jointed. Only the Indian bamboo has short leaves, but in all the reeds the leaves sprout from a knot and wrap the stem all round with coats of thin tissue, and at a point halfway between two knots usually cease to clothe the stems and droop forward. The reed and the cane though round have two sides, with a series of shoots thrown out above the knots alternately, so that one forms on the right side and then another at the next joint above on the left, turn and turn about. From these sometimes grow branches, which are themselves slender canes.

LXVI. There are, however, several varieties of reed. One is rather compact and has joints closer together, with short spaces between them, while another has them farther apart with larger spaces between *Other varieties of reed.*

tenuiorque et ipsa. calamus vero alius totus concavus, quem vocant syringian, utilissimus fistulis, quoniam nihil est ei cartilaginis atque carnis. Orchomenio et nodi continuo foramine pervii, quem
165 auleticon vocant; hic tibiis utilior, fistulis ille. est alius crassiore ligno et tenui foramine; hunc totum fungosa replet medulla. alius brevior, alius procerior, exilior crassiorque. fruticosissimus qui vocatur donax, non nisi in aquaticis natus, quoniam et haec differentia est, multum praelata harundine quae in
166 siccis proveniat. suum genus sagittario calamo, ut diximus, sed Cretico, longissimis internodiis, obsequiosum[1] quo libeat flecti calefacto. differentias faciunt et folia non multitudine ⟨tantum et longitudine⟩[2] verum et colore. varia Laconicis et ab ima parte densiora, quales in totum circa stagna gigni putant dissimiles amnicis, longisque vestiri foliis
167 spatiosius a nodo scandente complexu. est et obliqua harundo, non in excelsitatem nascens sed iuxta terram fruticis modo se spargens, suavissima in teneritate animalibus: vocatur a quibusdam eletia.[3] est et in Italia palustris ex cortice tantum sub ipsa

[1] *Rackham*: obsequiumque.
[2] *Mayhoff e Theophr.*: ⟨tantum⟩ *Pintianus*, non ⟨modo⟩ multitudine *Ian.*
[3] *Detlefsen*: iletia *Urlichs*: elegia.

them, and is also thinner in itself. But another kind of cane is hollow for its whole length; its Greek name means the flute-reed, and it is very useful for making flutes because it contains no pith and no fleshy substance. The Orchomenus cane has a passage right through even the knots, and is called in Greek the pipe-reed; this is more suitable for flageolets, as the preceding kind is for flutes. There is another reed the wood of which is thicker and the passage narrow; this reed is entirely filled with spongy pith. Reeds are of various lengths and thickness. The one called the donax throws out most shoots; it only grows in watery places—inasmuch as this also constitutes a difference, a reed growing in dry places being much preferred. The reed used as an arrow is a special kind, as we have said, but the Cretan variety has the longest § 161.
intervals between the knots, and when heated allows itself to be bent in any direction you please. Also differences are made by the leaves, which vary not only in number and length but also in colour. The Laconian reed has spotted leaves, and throws out a greater number at the bottom of the stalk, as is thought to be the case with reeds in general that grow round marshy pools, which are different from river reeds, being draped with long leaves climbing upward and embracing the stem for a considerable distance above the knot. There is also a slanting reed which does not shoot upward to any height but spreads itself out close to the ground like a shrub; it is very attractive to animals when young and tender, and is called by some people the eletia. Also in Italy there is a growth, found in marsh-reeds, only coming out of the outer skin just below the tuft, named

coma nascens, adarca nomine,[1] utilissima dentibus, quoniam vis eadem est quae sinapi.

168 De Orchomenii lacus harundinetis accuratius dici cogit admiratio antiqua. characian vocabant crassiorem firmioremque, plocimon vero subtiliorem, hanc in insulis fluitantibus natam, illam in ripis
169 exspatiantis lacus. tertia est harundo tibialis calami, quem auleticon dicebant. nono hic anno nascebatur; nam et lacus incremento hoc temporis spatium [2] servabat, prodigiosus si quando amplitudinem biennio extendisset, quod notatum apud Chaeroniam infausto Atheniensium proelio. est prope Lebadia** [3] vocatur influente Cephiso. cum igitur anno permansit inundatio, proficiunt in aucupatoriam quoque amplitudinem: vocabantur zeugitae; contra bombyciae maturius reciproca,[4] graciles, feminarum latiore folio atque candidiore, modica lanugine aut omnino
170 nulla spadonum nomine insignis. hinc erant armamenta ad inclutos cantus, non silendo et reliquo curae miraculo, ut venia sit argento iam potius cani. caedi solebant tempestivae usque ad Antigeniden tibicinem, cum adhuc simplici musica uterentur, sub Arcturo.

[1] *Urlichs*: nascens adarca nomine *ante* palustris.
[2] incremento . . . spatium? *Mayhoff*: incrementum . . . spatio.
[3] *Detlefsen*: et saepe lebaida.
[4] reciproca? *Mayhoff*: reciproco.

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[a] At Chaeronea in Boeotia the Athenians and Boeotians were defeated by Philip of Macedon's invading army, 338 B.C.
[b] The Latin text is corrupt.

adarca, which is very beneficial for the teeth, as it has the same pungency as mustard.

Reeds of Orchomenus used especially for flutes.

The admiration expressed in old days for the reed-beds of the Lake of Orchomenus compels me to speak about them in greater detail. The Greek name for a rather thick, stronger kind of reed used to be 'fence-reed,' and for a more slender variety 'plaiting reed,' the latter growing in islands floating on the water and the former on the banks overflowed by the lake. The third is the flageolet reed—'pipe-reed' used to be the Greek name for it. This took eight years to grow, as the lake also regularly took that space of time in rising, it being thought to be a bad omen if ever it continued at its full height two years longer, a thing that was marked by the fatal Athenian battle at Chaeronea.[a] Not far off is Lebadea . . . is called . . . the Cephisus flowing into it.[b] When therefore the flooding has continued for a year, the reeds grow even to a size suitable for purposes of fowling: these used to be called in Greek 'yoke-reeds'; on the other hand those growing when the flood goes down sooner were called 'silky reeds,' with a thin stalk, those with a broader and whiter leaf being distinguished by the name of 'female reeds,' and those with only a small amount of down or none at all being called 'eunuchs.' These supplied the instruments for glorious music, though mention must also not be omitted of the further remarkable trouble required to grow them, so that excuse may be made for the present-day preference for musical instruments of silver. Down to the time of the flautist Antigenides, when a simple style of music was still practised, the reeds used to be regarded as ready for cutting after the rising of Arcturus. When thus

sic praeparatae aliquot post annos utiles esse
171 incipiebant, tunc quoque multa domandae exer-
citatione et canere tibiae ipsae edocendae, com-
primentibus se lingulis, quod erat illis theatrorum
moribus utilius. postquam varietas accessit et
cantus quoque luxuria, caedi ante solstitia coeptae et
fieri utiles in trimatu, apertioribus earum lingulis
172 ad flectendos sonos, quae inde sunt et hodie. sed
tum ex sua quamque tantum harundine congruere
persuasum erat, et eam quae radicem antecesserat
laevae tibiae convenire, quae cacumen dexterae,
inmensum quantum praelatis quas ipse Cephisus
abluisset. nunc sacrificae Tuscorum e buxo, ludicrae
vero e loto ossibusque asininis et argento fiunt.
aucupatoria harundo e [1] Panhormo laudatissima,
piscatoria Abaritana ex Africa.

173 LXVII. Harundinis Italiae usus ad vineas maxime.
Cato seri eam iubet in umidis agris bipalio subacto
prius solo, oculis dispositis intervallo ternorum
pedum, simul et corrudae,[2] unde asparagi fiant, con-
cordare amicitiam, salicis vero circa; qua nulla
aquaticarum utilior, licet populi vitibus placeant et
Caecuba educent, licet alni saepibus muniant contra-

[1] *Mayhoff*: a.
[2] *Mayhoff*: corrudam.

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[a] A treble flute was held in the right hand and a bass flute in the left, both being played at once.

[b] *Oculi* the 'eyes' or knobs on the roots, and so the cuttings used for planting, *cf.* XVII. 144.

prepared the reeds began to be fit for use a few years later, though even then the actual flutes needed maturing with a great deal of practice, and educating to sing of themselves, with the tongues pressing themselves down, which was more serviceable for the theatrical fashions then prevailing. But after variety came into fashion, and luxury even in music, the reeds began to be cut before midsummer and made ready for use in three years, their tongues being wider open to modulate the sounds, and these continue to the present day. But at that time it was firmly believed that only a tongue cut from the same reed as the pipe in each case would do, and that one taken from just above the root was suitable for a left-hand flute and one from just below the top for a right-hand [a] flute; and reeds that had been washed by the waters of Cephisus itself were rated as immeasurably superior. At the present time the flutes used by the Tuscans in religious ritual are made of box-wood, but those for theatrical performances are made of lotus and asses' bones and silver. The reeds most approved for fowling come from Palermo, and those to make fishing-rods are from Abarsa in Africa.

LXVII. In Italy the reed is chiefly employed to serve as a prop for vines. Cato recommends planting it in damp lands, after first working the soil with a double mattock, a space a yard wide being left between the shoots [b]; and he says that at the same time also wild asparagus, from which garden asparagus is produced, associates in friendship with it, and so does willow when planted round it—the willow being the most useful of the water-plants, although vines like poplars and the Caecuban vines are trained

Italian reeds for props.

R.R. VI. 3, 4.

que erumpentium amnium impetus riparum modo[1] in tutela ruris excubent in aqua satae densius, caesaeque[2] innumero herede prosint.

174 LXVIII. Salicis utilitatum[3] plura genera. namque et in proceritatem magnam emittunt iugis vinearum perticas pariterque[4] balteo corticis vincula, et aliae virgas sequaces ad vincturas lentitiae, aliae[5] praetenues viminibus texendis spectabili subtilitate, rursus aliae firmiores corbibus ac plurimae agricolarum supellectili, candidiores ablato cortice levique tractatu amplioribus[6] vasis quam[7] ut e corio fiant eadem,[8] atque etiam supinarum in delicias cathe-
175 drarum aptissimae. caedua salici fertilitas densiorque tonsura ex brevi pugno verius quam ramo, non, ut remur, in novissimis curanda arbore: nullius quippe tutior reditus est minorisve inpendi aut tempestatium securior.

176 LXIX. Tertium locum ei in aestimatione ruris Cato adtribuit prioremque quam olivetis quamque frumento aut pratis—nec quia desint alia vincula, siquidem et genistae et populi et ulmi et sanguinei frutices et betullae et harundo fissa et harundinum folia, ut in Liguria, et vitis ipsa recisisque aculeis rubi

[1] *Warmington*: muro.
[2] *Urlichs*: caesasque densius.
[3] utilitatum? *Mayhoff* (*ipse* etiam): statim.
[4] *Detlefsen*: pariuntque.
[5] *Edd.*: alias.
[6] amplioribus? *Mayhoff* (*ipse* maioribus): melioribus *aut* mollioribus.
[7] *Edd.* quae.
[8] *Mayhoff*: eodem.

up on them, and although alders in hedges give protection and, if planted rather close together in water, stand sentry like banks to guard the country against the assaults of the rivers when they overflow, and when cut down they are useful because of the innumerable suckers that they produce as successors.

Willows provide poles and withes.

LXVIII. The uses made of willows are of several kinds. They send out rods of great length used for vine-trellises and at the same time provide strips of bark for withes, and some grow shoots of a yielding flexibility useful for tying, others extremely thin ones suitable for weaving into basketwork of an admirably fine texture, and other stronger ones for plaiting baskets and a great many agricultural utensils, while the whiter ones when the bark has been removed and they have been worked smooth do to make bottles more capacious than any that can be made of leather, and also are extremely suitable for luxurious easy chairs. The willow sprouts again after being lopped, and from the short stump, which is more like a fist than a branch, makes a thicker growth for cutting, the tree being in our opinion not one of the last to choose for cultivation, inasmuch as none yields a safer return or involves less outlay, and none is more indifferent to weather.

Varieties of willow.

LXIX. Cato[a] attributes to the willow the third place in the estimation of the country-side, and puts it before the cultivation of the olive and before corn or meadow-land—and this is not because other kinds of withes are lacking, inasmuch as the broom, the poplar, the elm, the blood-red cornel, the birch, the reed when split and the leaves of the reed, as in Liguria, and the vine itself and brambles after the thorns have been

[a] *R.R.* I. 7.

alligant et intorta corylus—mirumque contuso ligno alicui maiores ad vincula esse vires; salici tamen
177 praecipua dos. finditur Graeca rubens, candidior Amerina sed paulo fragilior ideo solido ligat nexu. in Asia tria genera observant: nigram utiliorem viminibus, candidam agricolarum usibus, tertiam quae brevissima est helicem vocant. apud nos quoque multi totidem generibus nomina inponunt: unam[1] viminalem vocant eandemque purpuream, alteram nitellinam a colore, quae est[2] tenuior, tertiam Gallicam quae tenuissima.

178 LXX. Nec in fruticum nec in veprium cauliumve neque in herbarum aut alio ullo quam suo genere numerentur iure scirpi fragiles palustresque, e quibus tegulum tegetesque et qui[3] detracto cortice candelae luminibus et funeribus serviunt. firmior quibusdam in locis eorum rigor; namque iis velificant non in Pado tantum nautici verum et in mari piscator Africus praepostero more velum intra malos suspendens, et mapalia sua Mauri tegunt, proximeque aestimanti hoc videantur esse quod in interiore parte mundi papyrum.

179 LXXI. Sui[4] sed frutectosi generis sunt inter aquaticas et rubi, atque sabuci fungosi generis, aliter tamen

[1] unam *add. Rackham.*
[2] est? *Mayhoff*: sit.
[3] *Rackham*: et tegulum tegetesque e quibus (e quibus [et] tegulum tegetesque *Mayhoff*).
[4] *Sillig*: sui *supra cum* papyrum *edd.*

[a] *Viz.*, Egypt. [b] Brambles and elders are not water-plants.

cut off serve as ties, and also the hazel when twisted —and it is surprising that any wood should make stronger ties after being bruised by twisting; nevertheless it is the willow that has the properties specially required for this purpose. The Greek red willow is split, while the Amerian willow, which has a lighter colour but is a little more fragile, is consequently used as a tie without having been split. Three kinds are known in Asia: the black willow, which is more useful for ties, the white willow for agricultural purposes, and a third kind, which is the shortest, called the helix. With us also many people distinguish the same number of varieties by name; they call one 'plaiting willow' and also 'purple willow,' another, which is thinner, 'dormouse willow' from its colour, and a third, the thinnest, 'Gallic willow.'

LXX. The rush, having a fragile stalk and being a marsh plant, is not rightly to be reckoned in the class of bushes or of brambles or plants with stalks, nor yet among herbaceous plants, or in any other class except its own; it is used for making thatch and mats, and stripped of its outer coat serves for candles and funeral torches. In some places rushes are stronger and stiffer, for they are used to carry sails not only by boatmen on the Po but also at sea by the African fisherman, who hangs his sail in a preposterous fashion, between masts, and the Moors use them for roofing their cabins; and if one looks closely into the matter, rushes may appear to occupy the place held by the papyrus in the inner region of the world.[a] *Rushes.*

LXXI. Among water-plants, in a class of their own but of a bushy nature, are also brambles, and so are elders,[b] which are of a spongy nature, though in a *Brambles and elders.*

quam ferulae, quippe plus ligni est utique sabuco; ex qua magis canoram bucinam tubamque credit pastor ibi caesa ubi gallorum cantum frutex ille non exaudiat.
180 rubi mora ferunt et alio genere similitudinem rosae, qui[1] vocatur cynosbatos. tertium genus Idaeum vocant Graeci a loco, tenerior quam cetera minoribusque spinis et minus aduncis; flos eius contra lippitudines inlinitur, ex melle et igni sacro; contra stomachi quoque vitia bibitur ex aqua. sabuci acinos habent nigros atque parvos umoris lenti, inficiendo maxime capillo, qui et ipsi aqua decocti manduntur.

181 LXXII. Umor et corpori[2] arborum est, qui sanguis earum intellegi debet, non idem omnibus: ficis lacteus—huic ad caseos figurandos coaguli vis—cerasis cumminosus, ulmis salivosus, lentus ac pinguis, malis, vitibus, piris aquosus. vivaciora quibus lentior. atque in totum corpori arborum ut reliquorum animalium cutis, sanguis, caro, nervi, venae, ossa,
182 medullae. pro cute cortex; mirum, is in moro medicis sucum quaerentibus vere hora diei secunda lapide incussus manat, altius fractus siccus videtur. proximi plerisque adipes; hi vocantur a colore alburnum, mollis ac pessima pars ligni, etiam in

[1] quae *Mayhoff.*
[2] *Mayhoff*: cortici.

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[a] Erysipelas.

different way from the giant fennel, as at all events the elder has more wood; a shepherd believes that a horn or trumpet of elder wood will be louder if the wood was cut in some place where the elder bush is out of hearing of the crowing of cocks. Brambles bear blackberries, and one variety, which is called in Greek the dog-bramble, a flower like a rose. A third kind the Greeks call the Ida bramble, from the place where it grows, a more slender variety than the others, with smaller and less hooked thorns; its blossom is used to make an ointment for sore eyes, and also, dipped in honey, for St. Anthony's fire,[a] and also soaked in water it makes a draught to cure stomach troubles. Elder-trees have small black berries with a sticky juice, chiefly used for a hair dye; these also are boiled in water and eaten.

LXXII. There is also a juice in the body of trees, *Sap in trees.* which must be looked upon as their blood. It is not the same in all trees—in figs it is a milky substance, which has the property of curdling milk so as to produce cheese, in cherries it is gummy, in elms slimy, sticky and fat, in apples, vines and pears watery. The stickier this sap is, the longer the trees live. And in general the bodies of trees, *Physiological structure of trees.* as of other living things, have in them skin, blood, flesh, sinews, veins, bones and marrow. The bark serves for a skin; it is a remarkable fact as regards the bark on a mulberry that when doctors require its juice they strike it with a stone two hours after sunrise in spring and the juice trickles out, but if a deeper wound is made the bark seems to be dry. Next to the bark most trees have layers of fatty substance, called from its white colour alburnum; this is soft and the worst part of the wood, rotting easily

robore facile putrescens, teredini obnoxia, quare semper amputabitur. subest huic caro, carni [1] ossa,
183 id est materiae optimum. alternant fructus quibus siccius lignum, ut olea, magis quam quibus carnosum, ut cerasus. nec omnibus adipes carnesve largae, uti nec animalium acerrimis; neutrum habent buxus, cornus, olea, nec medullam minimumque etiam sanguinis, sicuti ossa non habent sorba, carnem sabuci —at [2] plurimam ambae medullam—nec harundines maiore ex parte.

184 LXXIII. In quarundam arborum carnibus pulpae venaeque sunt. discrimen earum facile, venae latiores candidioresque pulpa. fissilibus insunt; ideo fit ut aure ad caput trabis quamlibet praelongae admota ictus ab altero capite vel graphii sentiantur penetrante rectis meatibus sono, unde deprehenditur an torta sit
185 materies nodisque concisa. quibus sunt tubera sicut sunt [3] in carne glandia, in iis nec vena nec pulpa, quodam callo carnis in se convoluto; hoc pretiosissimum in citro et acere. cetera mensarum genera fissis arboribus circinantur in pulpam, alioqui fragilis esset vena in orbem arboris caesa. fagis pectines

[1] *Mayhoff*: cui.
[2] *Mayhoff*: et.
[3] *Edd.*: sic sunt.

even in a hard oak and liable to wood-worm, for which reason it will always be removed. Under this fat is the flesh of the tree and under the flesh the bones, that is the best part of the timber. Those trees which have a drier wood, for instance the olive, are more liable to bear fruit only every other year than trees whose wood is of a fleshy nature, like the cherry. And not all trees have a large amount of fat or flesh, any more than the most active among animals; there is no fat or flesh at all in the box, the cornel and the olive, nor any marrow, and only a very small quantity even of blood, just as the service-tree has no bones and the elder no flesh—though both have a great deal of marrow—nor have reeds for the greater part.

LXXIII. The flesh of some trees contains fibres and veins. It is easy to distinguish between them, the veins being broader and whiter than the fibre. Veins are found in wood that is easy to split, and consequently if you put your ear to one end of a beam of wood however great its length you can hear even taps made with a graver on the other end, the sound penetrating by passages running straight through the wood, and by this test you can detect whether the timber is twisted and interrupted by knots. In the case of trees in which there are tuberosities resembling the glands in the flesh of an animal, these contain no vessels or fibres, but a kind of hard knot of flesh rolled up in a ball; in the citrus and the maple this is the most valuable part. The other kinds of wood employed for making tables are cut into circles by splitting the trees along the line of the fibre, as otherwise the vein cut across the round of the tree would be brittle. In beech trees the

Wood fibres and veins.

traversi in pulpa; apud antiquos inde et vasis honos: M'. Curius iuravit se nihil ex praeda attigisse praeter guttum faginum quo sacrificaret.

186 Lignum in longitudinem fluitat,[1] utque quaeque[2] pars propior[3] fuit ab radice, validius sidit. quibusdam pulpa sine venis mero stamine et tenui constat; haec maxime fissilia. alia frangi celeriora quam findi, quibus pulpa non est, ut oleae, vites. at e contrario totum e carne corpus fico, tota ossea est[4] ilex, cornus, robur, cytisus, morus, hebenus, lotos et quae sine medulla esse diximus. ceteris nigricans color, fulva cornus in venabulis nitet incisuris nodata propter decorem. cedrus et larix et iuniperus

187 rubent. larix femina habet quam Graeci vocant aegida melleic oloris; inventum pictorum tabellis inmortale nullisque fissile rimis[5] hoc lignum: proximum medullae est; in abiete lusson Graeci vocant. cedri quoque durissima quae medullae proxima, ut in corpore ossa, deraso modo limo. et sabuci interiora mire firma traduntur, quidamque venabula ex ea praeferunt omnibus, constat enim ex cute et ossibus.

[1] *Pintianus*: fluctuatur.
[2] *Rackham* (ut quaeque *Mueller*): ut quae *aut* utque.
[3] propior *add. Rackham.*
[4] est *om. Mayhoff*: totae osseae sunt? *Rackham.*
[5] inventum . . . rimis *post* hoc lignum . . . vocant *coll. Theophr. tr. Mayhoff.*

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[a] The clause 'when made . . . cracks' ought perhaps to be transposed below to describe the wood called 'lusson,' in order to conform with Theophrastus.
[b] *Λοῦσσον* Theophrastus.
[c] The *alburnum*, cf. § 182.
[d] *Sc.* in Greece.

grainings in the fibre run crosswise, and consequently even vessels made of beechwood were highly valued in old days: Manius Curius declared on oath that he had touched nothing of the booty taken in a battle except a flask made of beech-wood, to use in offering sacrifices.

A log of timber floats more or less horizontally, each part of it sinking deeper the nearer it was to the root. Some timbers have fibre without veins, consisting of thin filaments merely; these are the easiest to split. Others have no fibre, and break more quickly than they split, for instance olives and vines. But on the other hand in the fig-tree the body consists entirely of flesh, while the holm-oak, cornel, hard oak, cytisus, mulberry, ebony, lotus and the trees that we have stated to be without marrow, consist entirely of bone. The timber of all of these is of a blackish colour except the cornel, hunting spears made of which are bright yellow when notched with incisions for the purpose of decoration. The cedar, the larch and the juniper are red. The female larch contains wood called in Greek aegis, of the colour of honey; this wood[a] when made into panels for pictures has been found to last for ever without being split by any cracks; it is the part of the trunk nearest to the pith; in the fir-tree the Greeks call this 'lusson.'[b] The hardest part of the cedar also is the part nearest the pith—as the bones are in the body—provided the slime[c] has been scraped off. It is reported[d] that the inner part of the elder also is remarkably firm, and some people prefer hunting spears made of it to all others, as it consists entirely of skin and bones.

Timber variously constructed.

§ 183.

188 LXXIV. Caedi tempestivum quae decorticentur, ut teretes ad templa ceteraque usus rotundi, cum germinant, alias cortice inextricabili et carie subnascente ei materiaque nigrescente, tigna et quibus auferat[1] securis corticem a bruma ad favonium aut, si praevenire cogamur, arcturi occasu et ante eum fidiculae, novissima ratione solstitio: dies siderum horum reddentur suo loco. vulgo satis putant observare ne qua dedolanda sternatur ante editos suos fructus.
189 robur vere caesum teredinem sentit, bruma autem neque vitiatur neque pandatur, alias obnoxium etiam ut torqueat sese findatque, quod in subere
190 tempestive quoque caeso evenit. infinitum refert et lunaris ratio, nec nisi a xx in xxx caedi volunt. inter omnes vero convenit utilissime in coitu eius sterni, quem diem alii interlunii, alii silentis lunae appellant. sic certe Tiberius Caesar concremato ponte naumachiario larices ad restituendum caedi in
191 Raetia praefinivit. quidam dicunt ut in coitu et sub terra sit luna, quod fieri non potest nisi noctu.

[1] *Warmington*: aufert.

[a] Presumably the structure made for the 'navalis proeli spectaclum' (*Monumentum Ancyranum* iv. 43) given by Augustus in 2 B.C. at the dedication of the temple of Mars Ultor; for this a basin was dug, probably in the Gardens of Caesar across the Tiber.

LXXIV. The proper time for felling trees that are to be stripped of their bark, for instance well-turned trees that are to be used for temples and other purposes requiring round pillars, is when they bud—at other times the bark is impossible to detach and decay is setting in under it and the timber is turning black; but the time for cutting beams and logs to be cleared of their bark by the axe is between midwinter and the period of westerly wind, or if we should be obliged to do it sooner, at the setting of Arcturus and, before that, at the setting of the Lyre, —on the earliest calculation at midsummer: the dates of these constellations will be given in the proper place. It is commonly thought sufficient to take care that no tree is felled to be rough-hewn before it has born its fruit. The hard oak if cut in spring is liable to wood-worm; if cut at midwinter it neither rots nor warps, but otherwise it is even liable to twist and to split, and this happens in the case of the cork-tree even if felled at the proper time. It is also of enormous importance to take account of the moon, and people recommend that trees should be felled only between the twentieth and thirtieth days of the month. It is universally agreed, however, that the most advantageous time for felling timber is when the moon is in conjunction with the sun, the date which some call the interlunar day and others the day of the moon's silence. At all events those were the limits fixed in advance by the Emperor Tiberius for felling larches in Raetia for the reconstruction of the deck of the Naval Sham Fight[a] when it had been burnt down. Some people say that the moon ought to be in conjunction and below the horizon, a thing that can only happen in the night.

Season and methods for felling timber.

XVIII. 271, 313.

si competant coitus in novissimum diem brumae, illa fit[1] aeterna materies; proxime cum supra dictis sideribus. quidam et canis ortum addunt et sic
192 caesas materias in forum Augustum. nec novellae autem ad materiem nec veteres utilissimae. circumcisas quoque in medullam aliqui non inutiliter relinquunt, ut omnis umor stantibus defluat. mirum apud antiquos primo Punico bello classem Duilli imperatoris ab arbore LX die navigavisse, contra vero Hieronem regem CCXX naves effectas diebus XLV tradit L. Piso; secundo quoque Punico Scipionis classis XL die a securi navigavit. tantum tempestivitas etiam in rapida celeritate pollet.

193 LXXV. Cato hominum summus in omni usu de materiis haec adicit: 'Prelum ex sappino[2] atra potissimum facito. ulmeam, pineam, nuceam, hanc atque aliam materiem omnem cum ecfodies, luna decrescente eximito post meridiem sine vento austro. tum erit tempestiva cum semen suum maturum erit. cavetoque per rorem trahas aut doles.' idemque
194 mox: 'Nisi intermestri lunaque dimidiata ne tangas materiem; quam effodias aut praecidas abs terra,

[1] *Dalec.*: sit. [2] carpino *Cato.*

[a] In 260 B.C. the first fleet ever built at Rome, commanded by Cn. Cornelius Scipio Asina, was defeated by the Carthaginians off Lipara; the command was transferred to the other consul, Duilius, who fitted the ships with boarding-bridges, and defeated the Carthaginians at Mylae by boarding their vessels.

[b] Hiero, king of Syracuse, in alliance with Carthage, made war against Rome 264 B.C. and was defeated and concluded a peace in the next year.

[c] *R.R.* XXXI. 1–2. [d] *Ib.* XXXVII. 3–4.

If conjunctions should coincide with the shortest day of the winter solstice, the timber produced lasts for ever; and the next best is when the conjunction coincides with the constellations mentioned above. Some people add the rising of the Dog-star also, and say that this was how the timber used for the Forum of Augustus was felled. But trees that are neither quite young nor old are the most useful for timber. Another plan not without value is followed by some people, who make a cut round the trees as far as the pith and then leave them standing, so that all the moisture may drain out of them. It is a remarkable fact that in old days in the first Punic War the fleet commanded by Duilius [a] was on the water within 60 days after the timber left the tree, while, according to the account of Lucius Piso, the 220 ships that fought against King Hiero [b] were built in 45 days; also in the second Punic war Scipio's fleet sailed on the 40th day after the timber had been felled. So effective is prompt action even in the hurry of an emergency.

LXXV. Cato, the leading authority on timber in all its uses, adds the following advice [c]: 'Make a press of black fir wood for choice. With elm, pine or walnut timber, when you are going to root up these or any other tree, take them up when the moon is waning, in the afternoon, when there is not a south wind. A tree will be ready for felling when its seed is ripe. And be careful not to haul a tree or trim it with the axe when there is a dew.' And the same writer later [d]: 'Do not touch timber except at new moon, or else at the end of the moon's second quarter; with timber which you dig up by the roots or cut off level with the ground, *Cato on timber.*

diebus VII proximis quibus luna plena fuerit, optime eximitur. omnino caveto ni quam[1] materiem doles neve caedas neve tangas nisi siccam, neve gelidam neve rorulentam.' Tiberius item[2] et in capillo tondendo servavit interlunia. M. Varro adversus defluvia praecipit observandum id a pleniluniis.

195 LXXVI. Larici[3] et magis abieti[4] succisis umor diu defluit. hae omnium arborum altissimae ac rectissimae. navium malis antemnisque propter levitatem praefertur abies. commune et his et pino quoque[5] ut quadripertitos venarum cursus bifidosve habeant vel omnino simplices. fabrorum in[6] intestina opera medulla sectilis optima quadripertitis . . .[7] materies et mollior quam ceterae; intellectus in cortice pro-
196 tinus peritis. abietis quae pars a terra fuit enodis est. haec qua diximus ratione fluviata detoratur[8] atque ita sappinus vocatur, superior pars nodosa duriorque fusterna. et in ipsis autem arboribus robustiores aquiloniae partes; et in totum deteriores ex umidis opacisque, spissiores ex apricis ac diuturnae; ideo Romae infernas abies supernati praefertur.

[1] *Gesner*: nigram.
[2] *Urlichs*: idem.
[3] *Edd.*: laricis.
[4] *Edd.*: abietis.
[5] commune . . . quoque? *Mayhoff*: communia his pinoque.
[6] in *add. Sillig.*
[7] ⟨pessima bifidis⟩ *Mayhoff.*
[8] *Detlefsen* (decorticatur *alii*): decoratur.

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[a] Turpentine.
[b] The words rendered 'and that . . . worst' are a conjectural addition to the Latin.

the seven days next after full moon are the best for removing it. Beware absolutely of rough-hewing or cutting or touching any timber unless it is dry, and when it is frozen or wet with dew.' Similarly the emperor Tiberius kept to the period between two moons even in having his hair cut. Marcus Varro advises the plan of having one's hair cut just after full moon, as a precaution against going bald.

Larch and silver fir, their uses and habitats

LXXVI. When the larch and still more the silver fir has been felled, a liquid [a] flows from them for a long time. These are the tallest and the straightest of all the trees. For the masts and spars of ships the fir is preferred because of its light weight. A property shared by these trees and also by the pine is that of having veins running through the wood in four or in two divisions, or else only in one line. The interior in the four-veined kind is the best timber to cut up for inlaid wood-work and that in the two-veined the worst,[b] and softer than the other kinds; experts can tell them at once from the bark. Fir wood from the part of the tree that was near the ground is free from knots. This timber after being floated in a river in the way which we have described is cleared of bulges, and when so treated § 186. is called sappinus, while the upper part which is knotted and harder is called club-wood. Moreover in the trees themselves the parts towards the north-east are stronger; and in general trees from damp and shady places are inferior and those from sunny places are closer grained and durable; on this account at Rome fir from the Tuscan coast is preferred to that from the Adriatic.

197 Est inter[1] se gentium quoque in his differentia. Alpibus Appenninoque laudatissimae, in Galliae[2] Iuribus ac monte Vosego, in Corsica, Bithynia, Ponto, Macedonia. deterior Aenianica et Arcadica, pessima Parnasia et Euboica, quoniam ramosae ibi et contortae putrescentesque facile. at cedrus in Creta, Africa, Syria laudatissima. cedri oleo per-
198 uncta materies nec tiniam nec cariem sentit. iunipero eadem virtus quae cedro; vasta haec in Hispania maximeque Vaccaeis; medulla eius ubicumque[3] solidior etiam quam cedrus. publicum omnium vitium vocant spiras, ubi convolvere se venae atque nodi. inveniuntur in quibusdam sicut in marmore centra, id est duritia clavo similis, inimica serris; et quaedam forte accidunt, ut[4] lapide conprehenso ac[5] recepto in corpus aut alterius arboris ramo. ferunt lapides ita inventos ad continendos partus esse
199 remedio.[6] Megaris diu stetit oleaster in foro, cui viri fortes adfixerant arma, quae cortice ambiente aetas longa occultaverat; fuitque arbor illa fatalis, excidio urbis praemonito[7] oraculo cum arbor arma peperisset, quod succisae accidit ocreis galeisque intus repertis.

[1] inter *add. Rackham.*
[2] Galliae? *Mayhoff*: Gallia.
[3] utique? *Mayhoff.*
[4] ut *Dalec.*: in.
[5] ac? *Mayhoff*: aut.
[6] ferunt . . . remedio *hic Warmington: infra post* repertis.
[7] *Rackham*: praemonita *aut* praemonitas.

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[a] Perhaps the Latin should be altered to give 'at all events is.'

In trees of this class there is also a difference corresponding to their native countries. The most highly spoken of grow on the Alps and the Apennines, on the Jura and Vosges mountains of Gaul, in Corsica, Bithynia, Pontus and Macedonia. The firs of Aenia and Arcadia are inferior, and those of Parnassus and Euboea the worst, because in those places they are branchy and twisted and the wood is apt to rot. As for the cedar, those in Crete, Africa and Syria are the most highly spoken of. Timber well smeared with cedar oil does not suffer from maggot or decay. The juniper has the same excellence as the cedar; this tree grows to a great size in Spain and especially in the territory of the Vaccaei; the heart of its timber is everywhere [a] even more solid than that of the cedar. A general fault of all timber is what is called cross-grain, when the veins and knots have grown twisted. In some trees are found centres like those in marble, that is hard pieces like a nail, unkind to the saw; and there are some hardnesses due to accident, as when a stone, or the branch of another tree, has been caught in a hollow and taken into the body of the tree. It is said that stones found inside trees serve as a preventive against abortion. In the market-place at Megara long stood a wild olive tree on which brave warriors had hung their weapons; these in the course of time had been hidden by the bark growing round them; and on this tree depended the fate of the city, an oracle having prophesied that it would be destroyed when a tree gave birth to arms—which happened to this tree when it was cut down, greaves and helmets being found inside it.

Peculiarities as to timber.

200 Amplissima arborum ad hoc aevi existimatur Romae visa quam propter miraculum Tiberius Caesar in eodem ponte naumachiario exposuerat advectam cum reliqua materie, duravitque ad Neronis principis amphitheatrum. fuit autem trabs ea e larice, longa pedes cxx, bipedali crassitudine aequalis, quo intellegebatur vix credibilis reliqua altitudo fasti-
201 gium ad cacumen aestimantibus. fuit memoria nostra et in porticibus saeptorum a M. Agrippa relicta aeque miraculi causa, quae diribitorio superfuerat, xx pedibus brevior, sesquipedali crassitudine. abies admirationis praecipuae visa est in nave quae ex Aegypto Gai principis iussu obeliscum in Vaticano circo statutum quattuorque truncos lapidis eiusdem ad sustinendum eum adduxit; qua nave nihil admirabilius visum in mari certum est. $\overline{\text{cxx}}$ modium lentis pro
202 saburra ei fuere: longitudo spatium obtinuit magna ex parte Ostiensis portus latere laevo; ibi namque demersa est Claudio principe cum tribus molibus turrium altitudine in ea exaedificatis, factis[1] ob id ex[2] Puteolano pulvere advectisque. arboris eius crassitudo quattuor hominum ulnas conplectentium implebat; vulgoque auditur $\overline{\text{lxxx}}$ nummum et pluris malos venundari ad eos usus, rates vero conecti
203 $\overline{\text{xl}}$ sestertium plerasque. at in Aegypto ac Syria reges inopia abietis cedro ad classes feruntur

[1] factis *add. Rackham.*
[2] *Detlefsen*: obiter.

[a] Nero, in his second consulship, A.D. 59, erected a vast amphitheatre of wood, as a temporary structure.

What is believed to have been the largest tree ever seen at Rome down to the present time was one that Tiberius Caesar caused to be exhibited as a marvel on the deck of the Naval Sham Fight before mentioned; it had been brought to Rome with the rest of the timber used, and it lasted till the amphitheatre of the emperor Nero.[a] It was a log of larchwood, 120 feet long and of a uniform thickness of two feet, from which could be inferred the almost incredible height of the rest of the tree by calculating its length to the top. Within our own memory there was also an equally marvellous tree left by Marcus Agrippa in the porticos of the Voting-booths, left over from the timber used for the ballot office; this was twenty feet shorter than the one previously mentioned, and 18 inches in thickness. An especially wonderful fir was seen in the ship which brought from Egypt at the order of the emperor Gaius the obelisk erected in the Vatican Circus and four shafts of the same stone to serve as its base. It is certain that nothing more wonderful than this ship has ever been seen on the sea: it carried one hundred and twenty bushels of lentils for ballast, and its length took up a large part of the left side of the harbour of Ostia, for under the emperor Claudius it was sunk there, with three moles as high as towers erected upon it that had been made of Pozzuoli cement for the purpose and conveyed to the place. It took four men to span the girth of this tree with their arms; and we commonly hear that masts for those purposes cost 80,000 sesterces and more, and that to put together the rafts usually runs to 40,000. But in Egypt and Syria for want of fir the kings are said to have used cedar

Exceptionally large trees.

§ 190.

Trees for ship-building.

usi; maxima[1] in Cypro traditur, ad undeciremem
Demetrii succisa, cxxx pedum, crassitudinis vero ad
trium hominum conplexum. Germaniae praedones
singulis arboribus cavatis navigant, quarum quaedam
et xxx homines ferunt.

204 Spississima ex omni materie, ideo et gravissima,
iudicatur hebenus et buxus, graciles natura. neutra
in aquis fluvitat, nec suber si dematur cortex, nec
larix. ex reliquis spississima lotos quae Romae ita
appellatur, dein robur exalburnatum. et huic nigri-
cans color magisque etiam cytiso, quae proxime
accedere hebenum videtur, quamquam non desunt
205 qui Syriacas terebinthos nigriores adfirment. cele-
bratur[2] et Thericles nomine calices ex terebintho
solitus facere torno: perquam probatur materies;
omnium haec sola ungui vult meliorque fit oleo.
colos mire adulteratur iuglande ac piro silvestri
tinctis atque in medicamine decoctis. omnibus quae
206 diximus spissa firmitas. ab iis proxima est cornus,
quamquam non potest nitere[3] materies propter
exilitatem, sed lignum non alio paene quam ad
radios rotarum utile aut si quid cuneandum sit in
ligno clavisve figendum ceu ferreis. ilex item et

[1] *Mayhoff*: maxima ea.
[2] celebravit *Mayhoff*.
[3] nitere? *Mayhoff* (*cf.* 186): videri.

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[a] See p. 468 n.

wood for their fleets; the largest cedar is reported to have been grown in Cyprus and to have been felled to make a mast for a galley with rowers in teams of eleven belonging to Demetrius; it was one hundred and thirty feet long and took three men to span its girth. The pirates of Germany voyage in boats made of a single tree hollowed out, some of which carry as many as thirty people.

The most close-grained of all timber and consequently the heaviest is judged to be ebony and box, both trees of a slender make. Neither will float in water, nor will the cork-tree if its bark be removed, nor the larch. Of the remainder the most close-grained is the one called at Rome the lotus,[a] and next the hard oak when the white sap-wood has been removed. The hard oak also has wood of a dark colour, and still darker is that of the cytisus, which appears to come very near to ebony, although people are to be found who assert that the turpentine-trees of Syria are darker. Indeed there is a celebrated artificer named Thericles who used to turn goblets of turpentine-tree wood, which is a highly valued material; it is the only wood that needs to be oiled, and is improved by oil. Its colour can be wonderfully counterfeited by staining walnut and wild pear wood and boiling them in a chemical preparation. All the trees that we have mentioned have hard close-grained wood. Next after them comes the cornel, though its wood cannot be given a shiny polish because of its poor surface; but cornel wood is hardly useful for anything else except the spokes of wheels or in case something has to be wedged in wood or fixed with bolts made of it, which are as hard as iron. There are also the holm-oak, the wild and cultivated *Varieties of grain of timber.*

oleaster et olea atque castanea, carpinus, populus. haec et crispa aceris modo—si ulla materies idonea esset ramis saepe deputatis: castratio illa est adi-
207 mitque vires. de cetero plerisque horum, sed utique robori, tanta duritia ut terebrari nisi madefactum non queat et ne sic quidem adactus avelli clavus. e diverso clavum non tenet cedrus. mollissima tilia; eadem videtur et calidissima: argumentum adferunt quod citissime ascias retundat. calidae et morus, laurus, hederae et omnia e quibus igniaria fiunt.

208 LXXVII. Exploratorum hoc usus in castris pastorumque repperit, quoniam ad excudendum ignem non semper lapidis occasio est; teritur ergo lignum ligno ignemque concipit adtritu, excipiente materie aridi fomitis, fungi vel foliorum facillimo conceptu. sed nihil hedera praestantius quae teratur, lauro quae terat; probatur et vitis ex silvestribus alia quam labrusca,
209 et ipsa hederae modo arborem scandens. frigidissima quaecumque aquatica; lentissima autem et ideo scutis faciendis aptissima quorum plaga contrahit se protinus cluditque suum vulnus et ob id contumacius tramittit ferrum, in quo sunt genere vitis,[1] vitex,[2]

[1] *Mayhoff e Theophr.*: fici.
[2] *Mayhoff e Vitruv.*: ut ex *aut* ilex.

[a] *Igniaria*, πυρεῖα, fire-sticks, were two pieces of hard wood ignited by rubbing them together.

olive, the chestnut, the hornbeam and the poplar. The last is also mottled like the maple—if only any timber could be any good when the branches of the tree are frequently lopped: this amounts to gelding the tree, and takes away all its strength. For the rest, most of these trees, but especially the hard oak, are so hard that it is not possible to bore a hole in the wood until it has been soaked in water, and even then when a nail has been driven right into it it cannot be pulled out. On the other hand cedar gives no hold to a nail. The softest of all woods is lime, and it is also apparently the hottest as well: it is adduced in proof of this that it turns the edge of adzes quicker than any other wood. Other hot woods are mulberry, laurel, ivy and all those used for making matches.[a]

LXXVII. This has been discovered by experience in the camps of military scouting parties and of shepherds, because there is not always a stone at hand to strike fire with; consequently two pieces of wood are rubbed together and catch fire owing to the friction, and the fire is caught in a lump of dry tinder, fungus or dead leaves catching most readily. But there is nothing better than ivy wood for rubbing against and laurel wood for rubbing with; one of the wild vines (not the claret-vine), which climbs up a tree like ivy, is also spoken well of. The trees that have the coldest wood of all are all that grow in water; but the most flexible, and consequently the most suitable for making shields, are those in which an incision draws together at once and closes up its own wound, and which consequently is more obstinate in allowing steel to penetrate; this class contains the vine, agnus castus,

Wood for kindling.

Other uses for wood.

salix, tilia, betulla, sabucus, populus utraque. levissimae ex his vitex,[1] salix ideoque utilissimae; omnes autem ad cistas quaeque [2] flexili crate constent habiles. habent et candorem, rigorem et in sculpturis
210 facilitatem. est lentitia platano, sed madida, sicut alno; siccior eadem ulmo, fraxino, moro, ceraso, sed ponderosior. rigorem fortissime servat ulmus, ob id cardinibus coassamentisque[3] portarum utilissima, quoniam minime torquetur, permutanda tantum sic ut ca-
211 cumen ab inferiore sit cardine, radix superior. palma est . . .[4] similis et suberis materies, spissae et malus pirusque, nec non acer, sed fragile, et quaecumque crispa. in omnibus silvestria et mascula differentiam cuiusque generis augent; et infecunda firmiora fertilibus, nisi quo in genere mares ferunt, sicut cupressus et cornus.

212 LXXVIII. Cariem vetustatemque non sentiunt cupressus, cedrus, hebenus, lotus, buxum, taxus, iuniperus, oleaster, olea; e reliquis tardissime larix, robur, suber, castanea, iuglans. rimam fissuramque non capit sponte cedrus, cupressus, olea, buxum.

213 LXXIX. Maxime aeternam putant hebenum, et cupressum cedrumque, claro de omnibus materiis iudicio in templo Ephesiae Dianae, utpote cum tota Asia extruente cxx annis peractum sit. convenit tectum

[1] *Mayhoff*: his sicut et.
[2] quaequae *Detlefsen.*
[3] *Schneidewin*: crassamentis.
[4] *Lacunam Mayhoff coll. Theophr.*

willow, lime, birch, elder, and both kinds of poplar. Of these woods the lightest and consequently the most useful are the agnus castus and the willow; but they are all suited for making baskets and things consisting of flexible wicker-work. Also they are shiny and hard, and easy to use in carvings. Plane has flexibility, but of a moist kind, like alder; a drier flexibility belongs to elm, ash, mulberry, and cherry, but it is heavier. Elm retains its toughness most stoutly, and is in consequence the most useful wood for the hinges and frames of doors, because it is not liable to warp, only it should be put the other way up, so that the top of the tree is towards the lower hinge and the root above. The palm is . . . and also cork-tree timber is similar; apple and pear are also close-grained, as well as maple, but maple is brittle, and so are any veined woods. In all trees the characteristics of each kind are carried further by wild specimens and by males; and barren trees have stronger wood than fertile ones, except in species where the male trees bear, for instance the cypress and the cornel.

Resistance to decay in various timbers.

LXXVIII. The following trees do not experience decay and age—cypress, cedar, ebony, lotus, box, yew, juniper, wild olive, cultivated olive; and of the remainder the slowest to age are the larch, hard oak, cork, chestnut and walnut. The cedar, cypress, cultivated olive and box do not split or crack of their own accord.

LXXIX. It is believed that ebony lasts an extremely long time, and also cypress and cedar, a clear verdict about all timbers being given in the temple of Diana at Ephesus, inasmuch as though the whole of Asia was building it it took 120 years to complete. It is

eius esse e cedrinis trabibus; de simulacro ipso deae ambigitur: ceteri ex hebeno esse tradunt, Mucianus III cos. ex iis qui proxime viso scripsere vitigineum
214 et numquam mutatum septies restituto templo, hanc materiam elegisse Endoeon,[1] etiam nomen artificis nuncupans, quod equidem miror, cum antiquiorem Minerva quoque, non modo Libero patre, vetustatem ei tribuat. adicit multis foraminibus nardo rigari, ut medicatus umor alat teneatque iuncturas—quas
215 et ipsas esse modico admodum miror—valvas esse e cupresso et iam CCCC prope annis durare materiem omnem novae similem. id quoque notandum, valvas in glutinis compage quadriennio fuisse. cupressus in eas electa, quoniam praeter cetera in uno genere
216 materiae nitor maxime valeat aeternus. nonne simulacrum Veiovis in arce e cupresso durat a condita urbe[2] DLXI[3] anno dicatum? memorabile et Uticae templum Apollinis, ubi cedro Numidica trabes durant, ita ut positae fuere prima urbis eius origine, annos[4] MCLXXVIII, et in Hispania Saguntі templum

[1] *Sillig*: eandem con.
[2] urbe *add. edd.*
[3] *numerum varie codd. et edd.*
[4] *Rackham*: annis.

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[a] *I.e.*, in view of the moderate size of the statue it is surprising that it was not carved out of a single block of wood.
[b] 193 B.C.

agreed that its roof is made of beams of cedar, but as to the actual statue of the goddess there is some dispute, all the other writers saying that it is made of ebony, but one of the people who have most recently seen it and written about it, Mucianus, who was three times consul, states that it is made of the wood of the vine, and has never been altered although the temple has been restored seven times; and that this material was chosen by Endoeus—Mucianus actually specifies the name of the artist, which for my part I think surprising, as he assigns to the statue an antiquity that makes it older than not only Father Liber but Minerva also. He adds that nard is poured into it through a number of apertures so that the chemical properties of the liquid may nourish the wood and keep the joins together—as to these indeed I am rather surprised that there should be any [a]—and that the folding doors are made of cypress wood, and the whole of the timber looks like new wood after having lasted nearly 400 years. It is also worth noting that the doors were kept for four years in a frame of glue. Cypress was chosen for them because it is the one kind of wood which beyond all others retains its polish in the best condition for all time. Has not the statue of Vejovis in the citadel, made of cypress wood, lasted since its dedication in the year 561 [b] after the foundation of Rome? Noteworthy also is the temple of Apollo at Utica, where beams of Numidian cedar have lasted for 1178 years just as they were when they were put in position at the original foundation of that city; and the temple of Diana at Saguntum in Spain, the statue of the goddess, according to the authority of Bocchus,

Dianae a Zacyntho advectae cum conditoribus annis cc ante excidium Troiae, ut auctor est Bocchus; intra [1] ipsum oppidum id habent—pepercit religione inductus Hannibal—iuniperi trabibus etiam
217 nunc durantibus. super omnia memoratur aedis Aulide eiusdem deae saeculis aliquot [2] ante Troianum bellum exaedificata, quonam genere materiae scientia oblitterata. in plenum dici potest utique quae odore
218 praecellant eas et aeternitate praestare. a praedictis morus proxume laudatur quae vetustate etiam nigrescit. et quaedam tamen in aliis diuturniora sunt usibus quam alias [3]: ulmus in perflatu firma, robur defossum et in aquis quercus obruta; eadem supra terram rimosa facit opera torquendo sese. larix in umore praecipua et alnus nigra; robur marina aqua conrumpitur. non inprobatur et fagus in aqua et iuglans, hae quidem in iis quae defodiuntur vel principales, item iuniperus (eadem et subdialibus aptissima), fagus et cerrus celeriter marcescunt,
219 aesculus quoque umoris inpatiens. contra adacta in terram in palustribus alnus aeterna onerisque quantilibet patiens. cerasus firma, ulmus et fraxinus lentae, sed facile pandantur, flexiles tamen, stantesque ac circumcisura siccatae fideliores.[4] laricem in maritimis

[1] intra? *Mayhoff*: infra.
[2] aliquot *add. Brotier.*
[3] alias *vel* in aliis? *Mayhoff*: alia.
[4] siccatae fiunt duriores *Detlefsen.*

having been brought there from Zacynthus with the founders of the city 200 years before the fall of Troy; it is kept inside the town itself—Hannibal from motives of religion spared it—and its beams, made of juniper, are still in existence even now. Memorable above all is the temple of the same goddess at Aulis, built some centuries before the Trojan war; all knowledge of what kind of timber it was built of has entirely disappeared. Broadly speaking it can at all events be said that those woods have the most outstanding durability which have the most agreeable scent. Next in esteem after the timbers mentioned stands that of the mulberry, which even darkens with age. At the same time also some woods last longer when employed in certain ways than they do otherwise: elm lasts best exposed to the air, hard oak when used under ground, and oak when submerged under water—oak when above the ground warps and makes cracks in structures. Larch and black alder do the best in damp; hard oak is rotted by sea water. Beech and walnut are also well spoken of for use in water, these timbers indeed holding quite the first place among those that are used under the ground, and likewise juniper (which is also very serviceable for structures exposed to the air), whereas beech and Turkey oak quickly decay, and the winter oak also will not stand damp. The alder on the other hand if driven into the ground in marshy places lasts for ever and stands a load of any amount. Cherry is a strong wood, elm and ash are tough but liable to warp, although they are flexible; and they are more reliable if the trees are left standing and dried by ringing round the trunk. Larch is reported to be liable to wood-worm when used in

navibus obnoxiam teredini tradunt, omniaque praeterquam oleastrum et oleam; quaedam enim in mari, quaedam in terra vitiis opportuniora.

220 LXXX. Infestantium quattuor genera. teredines capite ad portionem grandissimo rodunt dentibus; hae tantum in mari sentiuntur, nec aliam putant teredinem proprie dici. terrestres tinias vocant, culicibus vero similes thripas; quartum est et e vermiculorum genere, et horum [1] alii putrescente suco ipsa materie, alii pariuntur sicut in arboribus ex eo qui cerastes vocatur: cum tantum erosit ut
221 circumagat se, generat alium. haec nasci prohibet in aliis amaritudo, ut cupresso, in aliis duritia, ut buxo. tradunt et abietem circa germinationes decorticatam qua diximus luna aquis non corrumpi. Alexandri Magni comites prodiderunt in Tylo Rubri maris insula arbores esse ex quibus naves fierent, quas ducentis annis durantes [2] inventas, etsi mergerentur, incorruptas. in eadem esse fruticem baculis tantum idoneae crassitudinis, varium tigrium maculis, ponderosum et, cum in spissiora decidat, vitri modo fragilem.

[1] *Rackham*: eorum.
[2] durantes *om. Pintianus.*

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[a] Ship-worms.
[b] Tylos or Tyros, now Bahrein (*cf.* VI. 148, XII. 38 f.) in the Persian Gulf (often included by the ancients in the name 'Red Sea').
[c] Evidently teak is meant.

sea-going vessels, and the same with all woods except the wild and the cultivated olive; in fact some woods are more liable to faults in the sea and others in the ground.

Creatures injurious to timber.

LXXX. There are four kinds of pests that attack timbers. Borer-worms[a] have a very large head in proportion to their size, and gnaw away wood with their teeth; these worms are observed only in the sea, and it is held that they are the only ones to which the name of borer-worm properly applies. The land variety are called moths, but the name for those resembling gnats is thrips, and there is also a fourth kind belonging to the maggot class, of which some are engendered by the wood itself when its sap becomes putrid and others are produced by the worm called horned-worm—as they are in trees—which when it has gnawed away enough to be able to turn round, gives birth to another. The birth of these insects is prevented however in some trees, for instance the cypress, by the bitter taste of the wood, and in others, for instance the box, by its hardness. It is also said that the fir will not decay in water if about the time of budding and at the lunar period we stated it is stripped of its bark. The § 190.
companions of Alexander the Great stated that on the island of Tylos[b] in the Red Sea there are trees[c] used for building ships, the timbers of which have been found continuing free from rot for two hundred years even though they were under water. They further reported that the same island contains a shrub growing only thick enough for a walking stick, marked with stripes like a tiger skin, heavy and liable to break like glass when it falls on to things of harder substance.

222 LXXXI. Apud nos materiae finduntur aliquae sponte; ob id architecti eas fimo inlitas siccari iubent ut adflatus non [1] noceant. pondus sustinere validae abies, larix, etiam in traversum positae; robur, olea incurvantur ceduntque ponderi, illae renituntur nec temere rumpuntur, priusque
223 carie quam viribus deficiunt. et palmae arbor valida; in diversum enim curvatur [et populus] [2]: cetera omnia in inferiora pandantur, palma ex contrario fornicatim. pinus et cupressus adversus cariem tiniasque firmissimae. facile pandatur iuglans, fiunt enim et ex ea trabes; frangi se praenuntiat crepitu, quod et in Antandro [3] accidit, cum e balineis territi
224 sono profugerunt. pinus, piceae, alni ad aquarum ductus in tubos cavantur, obrutae terra plurimis duraturae annis; eaedem si non integantur cito senescunt, mirum in modum fortiores si umor extra quoque supersit.

225 LXXXII. Firmissima in rectum abies, eadem valvarum paginis et ad quaecumque libeat intestina opera aptissima, sive Graeco sive Campano sive Siculo fabricae artis genere, spectabilis ramentorum crinibus, pampinato semper orbe se volvens ad incitatos runcinae raptus, eadem e cunctis maxime sociabilis glutino, in tantum ut findatur ante qua solida est.

[1] ne *Mayhoff*.
[2] *Brotier*.
[3] *Brotier coll. Theophr.*: Andro.

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[a] Perhaps the meaning is that palm branches shoot upward and then curve over downward in an arch. It is true that the branches of other trees do not curve so noticeably, although it is not the case that none of them shoot upward from the trunk.

LXXXI. We have in our country some timbers liable to split of their own accord, and architects consequently recommend that they should be smeared with dung and then dried, so as to make them proof against the action of the atmosphere. Fir and larch are strong weight-carriers, even when placed horizontally, and whereas hard oak and olive bend and yield to a weight, the woods named resist it and are not readily broken, and they fail owing to rot before they fail in strength. The palm tree also is strong, for it curves in a different way to other trees: all the others curve downward, but the palm curves in the opposite direction,[a] making an arch. Pine and cypress are the strongest to resist rot and wood-worms. Walnut bends easily—for this wood also is used for making beams; when it breaks it gives a warning in advance by a creaking noise, as happened for instance at Antandro, when people in the public baths took alarm at the sound and made their escape. Pines, pitch pines and alders are hollowed to form pipes for conveying water, and when buried underground will last a number of years; but they age quickly if not covered over, the resistance they offer being remarkably increased if their outside surface also is covered with moisture. *Durability of timbers.*

LXXXII. Fir wood is strongest in a vertical position; it is very suitable for door panels and any kinds of inlaid work desired, whether in the Greek or the Campanian or the Sicilian style of joinery; under brisk planing it makes pretty curly shavings, always twisting in a spiral like the tendrils of a vine; moreover, of all sorts of wood it is most adapted for being glued together, so much so that it will split at a solid place before it parts at a join. *Use of fir.*

226 LXXXIII. Magna autem et glutinatio propter ea quae sectilibus laminis aut[1] alio genere operiuntur. stamineam in hoc usu probant venam (et vocant ferulaceam argumento similitudinis) quoniam lacunosa et crispa in omni genere glutinum abdicant; quaedam et inter se et cum aliis insociabilia glutino, sicut robur, nec fere cohaerent dissimilia natura, ut si quis lapidem lignumque coniungat. cornum maxime odit sorbus, carpinus, buxus, postea tilia.
227 cuicumque operi flexilia[2] omnia quae lenta diximus, praeterque morus et caprificus, forabilia ac sectilia quae modice umida; arida enim latius quam terebras aut serras[3] cedunt, viridia praeter robur et buxum pertinacius resistunt serrarumque dentes replent aequalitate inerti, qua de causa alterna inclinatione egerunt scobem.

228 LXXXIV. Oboedientissima quocumque in opere fraxinus, eademque hastis corylo melior, cornu levior, sorbo lentior; Gallica vero etiam ad currus flexili levi-
229 tate.[4] aemularetur ulmus ni pondus esset in culpa. facilis et fagus, quamquam fragilis et tenera; eadem sectilibus laminis in tenui flexilis capsisque ac scrineis sola utilis. secatur in lamnas praetenues et ilex, colore

[1] *Mayhoff*: ac in.
[2] *Warmington*: facilia flexilia.
[3] terebras aut serras *Warmington*: teras.
[4] *Detlefsen*: vita.

Veneer, and other uses of woods.

LXXXIII. Glueing also is important for veneering articles with thin sections of wood or otherwise. For use as veneer a thready veining is approved of (it is called fennel-pattern grain on account of the resemblance), because in every kind of wood pieces with gaps and twists in them do not take the glue; some woods cannot be joined by glueing either with wood of the same kind or with other woods, for example hard oak, and in general materials unlike in substance do not hold together, for instance if one tried to join stone and wood. The wood of the service-tree, the hornbeam and the box have a very strong dislike for cornel wood, and so to a smaller degree has lime. All of the woods we have described as yielding are easily bent for all purposes, and so besides are mulberry and wild fig; while those which are moderately moist are suitable for boring and sawing, since dry woods give way beyond the part which you bore or saw, whereas green woods except hard oak and box offer a more obstinate resistance, and fill up the teeth of saws in an ineffective even line; this is the reason why the teeth are bent each way in turn, so as to get rid of the sawdust.

Different kinds of timber, their uses.

LXXXIV. Ash is the most compliant wood in work of any kind, and is better than hazel for spears, lighter than cornel, and more pliable than service-tree; indeed the Gallic ash even has the suppleness and light weight required for chariots. The elm would rival it were not its weight against it. Beech also is easily worked, although brittle and soft; also cut in thin layers of veneer it is flexible, and is the only wood suitable for boxes and desks. The holm-oak as well cuts into extremely thin layers, and also has a not unattractive colour, but it is most

quoque non ingrata, sed maxime fida iis quae teran-
tur, ut rotarum axibus, ad quos lentore fraxinus sicut
230 duritia ilex et utroque legitur ulmus. sunt vero et
parvi usus fabrilium ministeriorum, insigneque[1]
proditum terebris vaginas ex oleastro, buxo, ilice,
ulmo, fraxino utilissimas fieri, ex iisdem malleos,
maioresque e pinu et ilice. et his autem maior ad
firmitatem causa tempestivae caesurae quam inma-
turae, quippe cum ex olea, durissimo ligno, cardines
in foribus diutius immoti plantae modo germina-
verint. Cato vectes aquifolios, laureos, ulmeos
fieri iubet, Hyginus manubria rusticis carpinea,
iligna, cerrea.

231 Quae in lamnas secentur quorumque operimento
vestiatur alia materies, praecipua sunt citrum, tere-
binthus, aceris genera, buxum, palma, aquifolium,
ilex, sabuci radix, populus. dat et alnus, ut dictum
est, tuber sectile sicut citrum acerque; nec aliarum
tuber tam[2] in pretio. media pars arborum crispior,
et quo propior radici minoribus magisque flexilibus
232 maculis. haec prima origo luxuriae arborum, aliam[3]
alia integi et vilioris ligni e pretiosiore corticem fieri.
ut una arbor saepius veniret, excogitatae sunt et
ligni bratteae. nec satis: coepere tingui animalium

[1] insigneque? *Mayhoff coll.* § 113: insignes ideoque.
[2] *Detlefsen* (tuber iam *Mayhoff*): tubera *aut* tuberia.
[3] aliam *add. Rackham.*

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[a] The word is primarily used of gold-leaf and other very thin plates of metal; here it denotes veneer.

reliable for things subjected to friction, for instance the axles of wheels, for which ash is selected because of its pliancy, as also is holm-oak for its hardness and elm for both qualities. But wood is also used in small pieces for the operations of carpentry, and a remarkable fact stated is that the most serviceable holders for augers are made from wild olive, box, holm-oak, elm and ash, and the best mallets from the same woods and larger ones from pine and holm-oak. But with these timbers also seasonable felling is more conducive to strength than if done prematurely, inasmuch as hinges made of olive, a very hard wood, that have been left too long unmoved in doorways have been known to put out shoots like a growing plant. Cato recommends holly, *R.R.* laurel or elm for making levers, and Hyginus horn- XXXI. 1. beam, holm-oak or Turkey-oak for the hafts of agricultural implements.

The principal woods for cutting into layers and *Veneering* for using as a veneer to cover other kinds of wood *for luxury furniture.* are citrus, turpentine-tree, varieties of maple, box, palm, holly, holm-oak, the root of the elder, and poplar. Also the alder, as has been stated, supplies § 69. a tuberosity that can be cut into layers, as do the citrus and the maple; no other trees have tuberosities so much valued. The middle part of trees is more variegated, and the nearer the root the smaller and the more wavy are the markings. This first originated the luxury use of trees, covering up one with another and making an outside skin for a cheaper wood out of a more expensive one. In order that one tree might be sold several times over, even thin layers [a] of wood have been invented. And this was not enough: the horns of animals began to be dyed

cornua, dentes secari lignumque ebore distingui,
233 mox operiri. placuit deinde materiem et in mari quaeri: testudo in hoc secta; nuperque portentosis ingeniis principatu Neronis inventum ut pigmentis perderet se plurisque veniret imitata lignum. modo luxuria non fuerat contenta ligno, iam lignum et e[1] testudine facit.[2] sic lectis pretia quaeruntur, sic terebinthum vinci iubent, sic citrum pretiosius fieri, sic acer decipi.

234 LXXXV. Vita arborum quarundam inmensa credi potest, si quis profunda mundi et saltus inaccessos cogitet. verum ex his quas memoria hominum custodit durant in Liternino Africani prioris manu sata olea,[3] item myrtus eodem loco conspicuae magnitudinis—subest specus in quo manes eius custodire draco tradi-
235 tur—Romae vero lotos in Lucinae area, anno qui fuit sine magistratibus CCCLXXIX urbis aede condita; incertum ipsa quanto vetustior: esse quidem vetustiorem non est dubium, cum ab eo luco Lucina nominetur. haec nunc D circiter annum habet; antiquior, sed incerta eius aetas, quae capillata dicitur, quoniam Vestalium virginum capillus ad eam defertur.

236 LXXXVI. Verum altera lotos in Volcanali quod Romulus constituit ex victoria de decumis, aequaeva

[1] et e *Salm.*: et *aut* emi.
[2] modo . . . facit *hic Warmington*: *infra post* decipi.
[3] *Detlefsen*: satae olivae.

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[a] 'Lucina' from 'lucus': really doubtless from 'lux,' the goddess of birth who brings infants into the light of day.

and their tusks cut in slices, and wood to be inlaid and later veenered with ivory. Next came the fancy of ransacking even the sea for material: tortoiseshell was cut up to provide it, and recently, in the principate of Nero, it was discovered by miraculous devices how to cause it to lose its natural appearance by means of paints and fetch a higher price by imitating wood. A little time ago luxury had not thought wood good enough, but now it actually manufactures wood out of tortoiseshell. By these methods high prices are sought for couches and orders are given to outdo turpentine wood, make a more costly citrus, and counterfeit maple.

LXXXV. If one thinks of the remote regions of the world and the impenetrable forests, it is possible that some trees have an immeasurable span of life. But of those that the memory of man preserves there still live an olive planted by the hand of the elder Africanus on his estate at Liternum and likewise a myrtle of remarkable size in the same place—underneath them is a grotto in which a snake is said to keep guard over Africanus's shade—and a lotus tree in the precinct of Lucina at Rome founded in 375 B.C., a year in which no magistrates were elected; how much older the tree itself is uncertain, but at all events there is no doubt that it is older, since it is from the grove in question that the goddess Lucina [a] takes her name. This tree is now about 500 years old; still older, though its age is uncertain, is the lotus tree called the Hair Tree, because the Vestal Virgins' offering of hair is brought to it.

Instances of longevity of trees.

Old trees in Rome.

LXXXVI. But there is another lotus tree in the precincts of Vulcan founded by Romulus from a tithe of his spoils of victory, which on the authority

urbi intellegitur, ut auctor est Masurius. radices eius in forum usque Caesaris per stationes municipiorum penetrant. fuit cum ea cupressus aequalis circa suprema Neronis principis prolapsa atque neglecta.

237 LXXXVII. Vetustior autem urbe in Vaticano ilex in qua titulus aereus [1] litteris Etruscis religione arborem iam tum dignam fuisse significat. Tiburtes quoque originem multo ante urbem Romam habent; apud eos extant ilices tres etiam Tiburno conditore eorum vetustiores, apud quas inauguratus traditur; fuisse autem eum tradunt filium Amphiarai qui apud Thebas obierit una aetate ante Iliacum bellum.

238 LXXXVIII. Sunt auctores et Delphicam platanum Agamemnonis manu satam et alteram in Caphya [2] Arcadiae loco.[3] sunt hodie ex adverso Iliensium urbis iuxta Hellespontum in Protesilai sepulchro arbores quae omnibus ex eo aevis, cum in tantum adcrevere ut Ilium aspiciant, inarescunt rursusque adolescunt; iuxta urbem autem quercus in Ili tumulo tunc satae dicuntur cum coepit Ilium vocari.

239 LXXXIX. Argis olea etiamnum durare dicitur ad quam Io in tauram mutatam Argus alligaverit. in

[1] *Huebner*: aereis.
[2] *Mayhoff*: Caphiae.
[3] *Urlichs*: luco.

of Masurius is understood to be of the same age as the city. Its roots spread right across the Municipal Offices as far as the Forum of Caesar. With this there grew a cypress of equal age, which about the closing period of Nero's principate fell down and was left lying.

LXXXVII. But on the Vatican Hill there is a holm-oak that is older than the city; it has a bronze tablet on it with an inscription written in Etruscan characters, indicating that even in those days the tree was deemed venerable. The people of Tivoli also date their origin far before the city of Rome; and they have three holm-oaks still living that date even earlier than their founder Tiburnus, the ceremony of whose installation is said to have taken place near them; but tradition relates that he was the son of Amphiaraus, who died in battle before Thebes a generation before the Trojan war.

LXXXVIII. Authorities say that there is a plane-tree at Delphi that was planted by the hand of Agamemnon, and also another at Caphya, a place in Arcadia. There are trees at the present day growing on the tomb of Protesilaus on the shore of the Dardanelles opposite the city of the Trojans, which in every period since the time of Protesilaus, after they have grown big enough to command a view of Ilium, wither away and then revive again; while the oaks on the tomb of Ilus near the city are said to have been planted at the date when the place first began to be called Ilium. *Old trees in Greece and Asia Minor.*

LXXXIX. It is said that at Argos there still survives the olive to which Argus tethered Io after she had been transformed into a heifer. West of

Ponto citra Heracleam arae sunt Iovis Στρατίου cognomine: ibi quercus duae ab Hercule satae. in eodem tractu portus Amyci est Bebryce rege interfecto clarus; eius tumulus a supremo die lauro tegitur quam insanam vocant, quoniam si quid ex ea decerptum infera-
240 tur navibus, iurgia fiunt donec abiciatur. regionem Aulocrenen diximus per quam Apamea in Phrygiam itur: ibi platanus ostenditur ex qua pependerit Marsuas victus ab Apolline, quae iam tum magnitudine electa est. nec non palma Deli ab eiusdem dei aetate conspicitur, Olympiae oleaster ex quo primus Hercules coronatus est: et nunc custoditur religio. Athenis quoque olea durare traditur in certamine edita a Minerva.

241 XC. Ex diverso brevissima vita est punicis, fico, malis, et ex his praecocibus brevior quam serotinis, dulcibus quam acidis,[1] et dulciori in punicis, item in vitibus, praecipueque fertilioribus. Graecinus auctor est sexagenis annis durasse vites. videntur et aquaticae celerius interire. senescunt quidem velociter sed e radicibus repullulant laurus et mali et punicae.

[1] *Pintianus* (acerbis *Urlichs*): acutis.

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[a] The contest for primacy at Athens, which Zeus had decided should go to the deity who did the citizens the best service; Poseidon constructed the harbour and shipyards, but Pallas Athene caused olive-trees to grow on the Acropolis, and she was declared the winner.

Heraclea in Pontus there are altars dedicated to Jupiter under his Greek title of Stratios, where there are two oak trees planted by Hercules. In the same region there is a port called Harbour of Amycus, famous as the place where King Bebryx was killed; his tomb ever since the day of his death has been shaded by a laurel tree which they call the Mad Laurel, because if a piece plucked from it is taken on board ships, quarrelling breaks out until it is thrown away. We have mentioned the region of Aulocrene, V. 106. traversed by the route leading from Apamea into Phrygia; in it travellers are shown the plane-tree from which Marsyas was hanged after losing his match with Apollo, and which was selected for the purpose on account of its size even then. Moreover at Delos may be seen a palm tree dating back to the time of the same deity, and at Olympia a wild olive from which was made the wreath with which Hercules was crowned for the first time—veneration for it is preserved even now. Also the olive tree produced by Minerva in the competition [a] is reported still to exist at Athens.

Short-lived species of trees.

XC. On the other hand pomegranates, the fig and the apple class are extremely short-lived; and among apples those that ripen early are more short-lived than those that ripen late and the sweet ones than the sour, and the same is the case with the sweeter variety among the pomegranates, and likewise among vines, and particularly the more fruitful ones. Graecinus states that there have been cases of vines living 600 years. It also appears that trees growing in water die more quickly. Laurels, apples and pomegranates age rapidly, it is true, but they put out shoots again from their roots. Consequently

firmissimae ergo ad vivendum oleae, ut quas durare annis cc inter auctores conveniat.

242 XCI. Est in suburbano Tusculani agri colle qui Corne appellatur lucus antiqua religione Dianae sacratus a Latio, velut arte tonsili coma fagei nemoris. in hoc arborem eximiam aetate nostra amavit Passienus Crispus bis cos., orator, Agrippinae matrimonio et Nerone privigno clarior postea, osculari conplectique eam solitus, non modo cubare sub ea vinumque illi adfundere. vicina luco est ilex et ipsa nobilis xxxiv pedum ambitu caudicis, decem ceu [1] arbores emittens singulas magnitudinis visendae silvamque sola faciens.

243 XCII. Hedera necari arbores certum est. similem quidam et in visco tametsi tardiorem iniuriam earum arbitrantur—namque et hoc praeter fructus adgnosci-

244 tur non in novissimis mirabile. quaedam enim in terra gigni non possunt et in arboribus nascuntur, namque cum suam sedem non habeant, in aliena vivunt: sicut viscum et in Syria herba quae vocatur cadytas, non tantum arboribus sed ipsis etiam spinis circumvolvens sese, item circa Tempe Thessalica quae polypodion vocatur et quae dolichos ac serpyllum.

[1] ceu *add. Mueller.*

the hardiest trees to live are olives, seeing that it is generally agreed among the authorities that they last 200 years.

XCI. On a hill named Corne in the territory of Tusculum, near the city, there is a grove named Corne which has been held in reverence from early times by the district of Latium as sacred to Diana; it consists of a beech coppice the foliage of which has the appearance of having been trimmed by art. This grove contains one outstanding tree which in our generation excited the affection of the orator Passienus Crispus, who had twice been consul and who subsequently became still more distinguished by marrying Agrippina and becoming the stepfather of Nero; Crispus used regularly not merely to lie beneath the tree and to pour wine over it, but to kiss and embrace it. Close to this grove is a holm-oak which is also famous, as measuring thirty-four feet round the trunk, and sending out what look like ten separate trees of remarkable size and forming a wood of itself.

Celebrated trees near Tusculum.

XCII. It is a well-known fact that trees are killed by ivy. Some people believe that a similar property noxious to trees, though operating more slowly, is also contained in mistletoe—for this plant also is recognised as by no means among the least remarkable on account of other properties beside its berries. For some varieties of plants cannot grow in the earth, and take root in trees, because they have no abode of their own and consequently live in that of others: instances of this are mistletoe and the plant in Syria called cadytas, which twines itself round not only trees but even teasels, and likewise in the district about Tempe in Thessaly the plant called polypodium, and also the dolichos and the serpyllum.

Parasitic plants noxious to trees.

oleastro quoque deputato quod gignatur vocant phaunos, quod vero in spina fullonia hippophaeston, cauliculis inanibus, foliis parvis, radice alba, cuius sucus ad detractiones in comitiali morbo utilissimus habetur.

245 XCIII. Visci tria genera. namque in abiete, larice stelin dicit Euboea,[1] hyphear Arcadia, viscum autem in quercu, robore, ilice, piro silvestri, terebintho, nec non et[2] aliis arboribus adgnasci plerisque,[3] copiosissimum in quercu quod dryos hyphear[4] vocant. in omni arbore excepta ilice et quercu differentiam facit acini[5] odor virusque et folium non iucundi odoris,
246 utroque visci amaro et lento. hyphear ad saginanda pecora utilius vicia[6]: modo purgat primo, dein pinguefacit quae suffecere purgationi, quibus sit aliqua tabes intus negant durare. ea medendi ratio aestatis quadragenis diebus. adiciunt discrimen visco, in iis[7] quae folia amittant[8] et ipsi decidere,
247 contra inhaerere nato in aeterna fronde. omnino autem satum nullo modo nascitur nec nisi per alvum avium redditum, maxime palumbis ac turdi: haec est natura ut nisi maturatum in ventre avium non proveniat. altitudo eius non excedit cubitalem, semper frutectosi ac viridis. mas fertilis,

[1] *Hermolaus*: Euboea nasci.
[2] non et *add. e Theophr. Mayhoff.*
[3] plerisque? *Mueller*: plerique.
[4] *Edd.*: quercu adhasphear *et alia.*
[5] acini *add. in adnot. Mayhoff.*
[6] *V.l.* vitia (*post punctum*).
[7] *Rackham*: his.
[8] *Caesarius*: mittant.

Also a plant that grows on a wild olive after it has been lopped is called phaunos, while one that grows on the fuller's teazel is called hippophaestum; it has hollow stalks, small leaves and a white root, the juice of which is considered very useful for purgatives in epilepsy.

XCIII. There are three kinds of mistletoe. One that grows as a parasite on the fir and the larch is called stelis in Euboea and hyphear in Arcadia, and the name of mistletoe is used for one growing on the oak, hard oak, holm-oak, wild pear, turpentine-tree, and indeed most other trees; and growing in great abundance on the oak is one which they call dryos hyphear. There is a difference in the case of every tree except the holm-oak and the oak in the smell and poison of the berry and the disagreeably scented leaf, both the berry and the leaf of the mistletoe being bitter and sticky. The hyphear is more useful than tare for fattening cattle; at first it only acts as a purge, but it subsequently fattens the beasts that have stood the purging process, although they say that those with some internal malady cannot stand it. This method of treatment is employed for forty days in summer. An additional variety is said to be found in mistletoe, in that when it grows on deciduous trees it also sheds its leaves itself, but when growing on an evergreen tree it retains its leaves. But universally when mistletoe seed is sown it never sprouts at all, and only when passed in the excrement of birds, particularly the pigeon and the thrush: its nature is such that it will not shoot unless it has been ripened in the stomach of birds. Its height does not exceed eighteen inches, and it is evergreen and always in leaf. The male *Varieties of mistletoe.*

femina sterilis, nisi quod et fertilis aliquando non fert.

248 XCIV. Viscum fit ex acinis qui colliguntur messium tempore inmaturi; nam si accessere imbres, amplitudine quidem augentur, visco vero marcescunt. siccantur deinde et aridi tunduntur ac conditi in aqua putrescunt duodenis fere diebus, unumque hoc rerum putrescendo gratiam invenit. inde in profluente, rursus malleo tusi, amissis corticibus interiore carne lentescunt. hoc est viscum pinnis avium tactu ligandis oleo subactum cum libeat insidias moliri.

249 XCV. Non est omittenda in hac re et Galliarum admiratio. nihil habent Druidae—ita suos appellant magos—visco et arbore in qua gignatur, si modo sit robur, sacratius. iam per se roborum eligunt lucos, nec ulla sacra sine earum fronde conficiunt, ut inde appellati quoque interpretatione Graeca possint Druidae videri; tum vero[1] quidquid adgnascatur illis e caelo missum putant signumque esse electae
250 ab ipso deo arboris. est autem id rarum admodum inventu et repertum magna religione petitur et ante omnia sexta luna (quae principia mensum annorumque his facit) et saeculi post tricesimum annum, quia

[1] tum vero? *Mayhoff*: enimvero.

plant is fertile and the female barren, except that even a fertile plant sometimes does not bear.

Mistletoe bird-lime.

XCIV. Mistletoe berries can be used for making bird-lime, if gathered at harvest time while unripe; for if the rainy season has begun, although they get bigger in size they lose in viscosity. They are then dried and when quite dry pounded and stored in water, and in about twelve days they turn rotten—and this is the sole case of a thing that becomes attractive by rotting. Then after having been again pounded up they are put in running water and there lose their skins and become viscous in their inner flesh. This substance after being kneaded with oil is bird-lime, used for entangling birds' wings by contact with it when one wants to snare them.

Worship of mistletoe in Gaul.

XCV. While on this subject we also must not omit the respect shown to this plant by the Gallic provinces. The Druids—that is what they call their magicians—hold nothing more sacred than mistletoe and a tree on which it is growing, provided it is a hard-oak. Groves of hard-oaks are chosen even for their own sake, and the magicians perform no rites without using the foliage of those trees, so that it may be supposed that it is from this custom that they get their name of Druids, from the Greek word meaning 'oak'; but further, anything growing on oak-trees they think to have been sent down from heaven, and to be a sign that the particular tree has been chosen by God himself. Mistletoe is, however, rather seldom found on a hard-oak, and when it is discovered it is gathered with great ceremony, and particularly on the sixth day of the moon (which for these tribes constitutes the beginning of the months and the years) and after every thirty years of

iam virium abunde habeat nec sit sui dimidia. omnia sanantem appellantes suo vocabulo, sacrificio epulisque rite sub arbore conparatis duos admovent candidi coloris tauros quorum cornua tum primum
251 vinciantur. sacerdos candida veste cultus arborem scandit, falce aurea demetit, candido id excipitur sago. tum deinde victimas immolant precantes, suum donum deus prosperum faciat iis quibus dederit. fecunditatem eo poto dari cuicumque animalium sterili arbitrantur, contra venena esse omnia remedio: tanta gentium in rebus frivolis plerumque religio est.

a new generation, because it is then rising in strength and not one half of its full size. Hailing the moon in a native word that means 'healing all things,' they prepare a ritual sacrifice and banquet beneath a tree and bring up two white bulls, whose horns are bound for the first time on this occasion. A priest arrayed in white vestments climbs the tree and with a golden sickle cuts down the mistletoe, which is caught in a white cloak. Then finally they kill the victims, praying to God to render his gift propitious to those on whom he has bestowed it. They believe that mistletoe given in drink will impart fertility to any animal that is barren, and that it is an antidote for all poisons. So powerful is the superstition in regard to trifling matters that frequently prevails among the races of mankind.

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A few biographical notes are added to supplement the facts given in the text and notes.

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